Chemical Week

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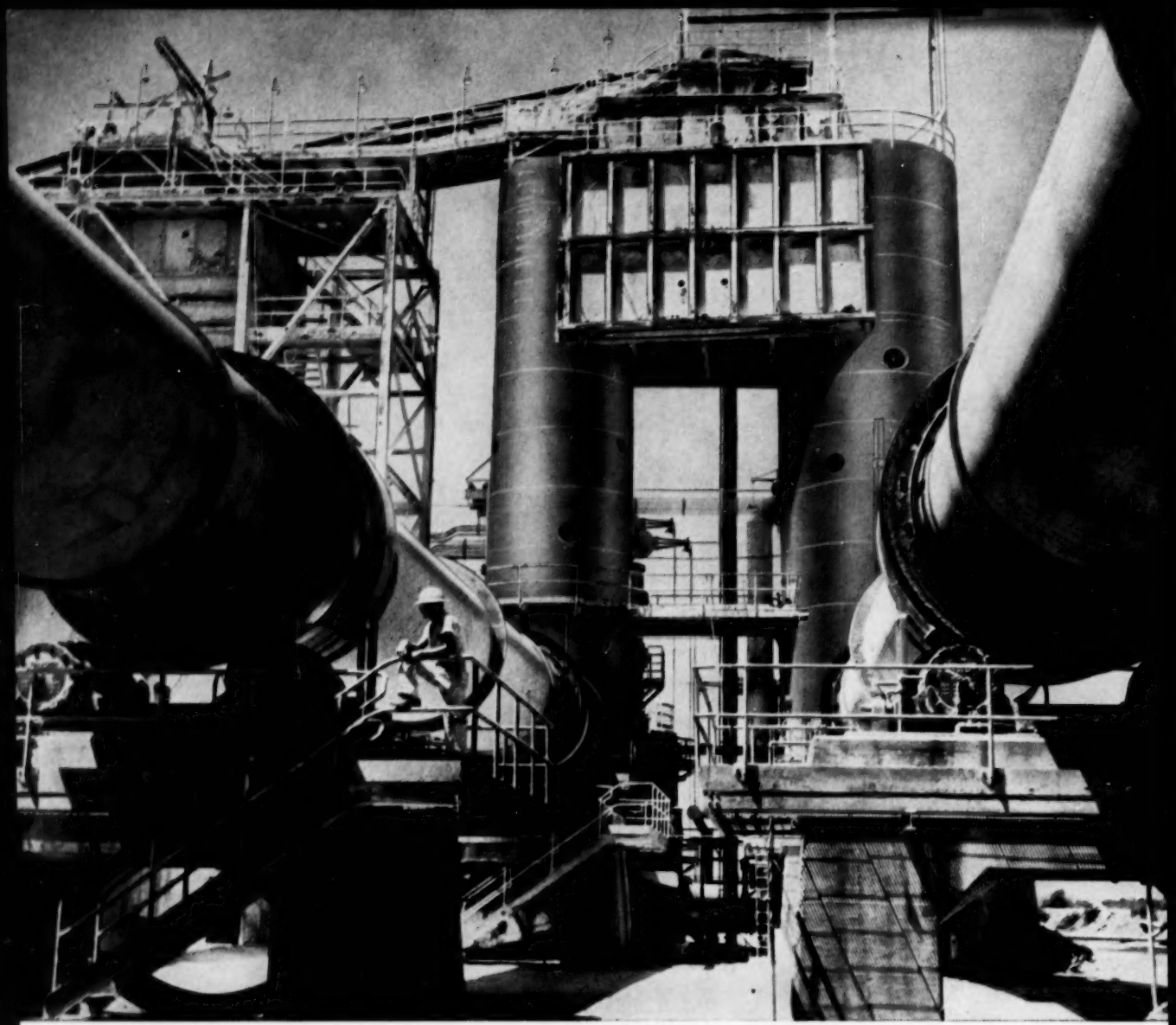

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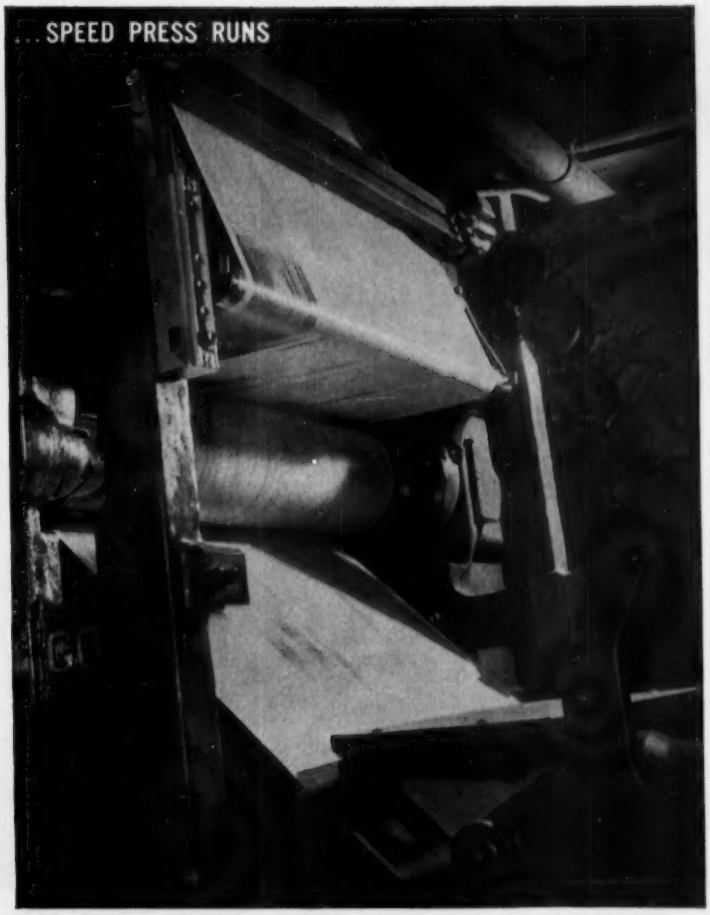

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G55-8

Dependable Source for Chemical Raw Materials

Lee O'Leary, purchasing agent, Ansul Chemical Co., Marinette, Wisc., and Russell Brustmann, assistant purchasing agent, discuss Ansul's basic chemical requirements with J. C. Mills, a representative of Wyandotte Chemicals.

"Wyandotte developed a new product to meet our specifications!"

- Lee O'Leary, p.a., Ansul Chemical Co., Marinette, Wisc.

In the little booklet that welcomes visitors to the Ansul Chemical plant at Marinette, Wisc., this statement can be found: "Ansul is more than a chemical company—it is a unique combination of a chemical-mechanical manufacturing concern."

"In all of our activities," states Lee O'Leary, Ansul's purchasing agent, "we have had to set some pretty rigid specifications, in order to maintain our own high quality. These, of course, apply to chemical ingredients.

"The chemical industry was most co-operative in helping us to realize our ambitions. Take Wyandotte, for example. Their research and production departments worked together to develop a new product to meet our unusual specifications.

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Chemical Week

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Export Furfural

TO THE EDITOR: In your news article outlining the activities of German chemical companies in Central and South America you say: "In the Dominican Republic the only German company officially in operation today is South Porto Rico Sugar Co.—processing sugar cane bagasse for export . . . But [in this country], too, the Germans have recently been observed paying courtesy calls, charting market potential . . ."

We are an American company, incorporated under the laws of New Jersey, and our Dominican Republic subsidiary, Central Romana By-Products Co., Inc., which makes furfural out of bagasse for export, is incorporated under the laws of New York . . .

D. DEBEVOISE
President
South Porto Rico Sugar Co.
New York

Sorry. We should have said that there are no German chemical companies operating in the Dominican Republic. In fact, the only chemical company in the Republic is Reader Debevoise's organization.—ED.

Not Our Province

TO THE EDITOR: I noted the extremely brief write-up . . . (*Aug. 6*) under "LABOR", page 34, of the election of John Clark as president of the Mill, Mine, & Smelter Workers Union. . . . I was pleased to note that you did, on page 22, give a sketchy account of the allegedly Communist activities of the MM&SW outfit. . . .

I wonder why it wouldn't be in order for a publication such as yours to devote at least a page a month to the cause of exposing our enemy "within our midst." I believe the vast majority of workers are 100% for us, but the infiltration of our enemy into the unions —and particularly in the fields cited above—is extremely bad.

There are publications – nationally and locally—doing an excellent job here, and there is very much yet to be done. . . .

JOHN K. CRIPPEN
L. B. Allen Co., Inc.
Chicago

CW's *chief criterion is that its objective news analyses should help the chemical businessman do his job better. Political crusades and socio-economic essays we'll leave to the many journals of subjective commentary and opinion.*—ED.

Just as Enticing

TO THE EDITOR: Let me append a footnote to a footnote for the sake of greater accuracy. In your recent excellent article on "chemical scarecrows" (*July 23*) you mention the use of Commerial Solvents' metaldehyde to attract and kill garden slugs and snails. . . . Aceto's metaldehyde (supplied by British Industrial Solvents) will also attract these animals and our product is as toxic as any other metaldehyde. The capital letter used in your description of this material seemed to indicate that it was a trademark, whereas actually, of course, metaldehyde is . . . a polymer of acetaldehyde.

S. MANN
Aceto Chemical Co., Inc.
Flushing, N.Y.

We agree. One man's metaldehyde is just as enticing and as toxic as another's.—ED.

DATES AHEAD . . .

Society for Industrial Microbiology, American Institute of Biological Sciences, joint meeting, Michigan State College, East Lansing, Sept. 5-8.

National Agricultural Chemicals Assn., annual meeting, Essex and Sussex Hotel, Spring Lake, N.J., Sept. 7-9.

American Chemical Society, national meeting, University of Minnesota, Minneapolis, Minn., Sept. 11-16.

National Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, Sept. 14-16.

Society of Cosmetic Chemists, annual seminar, Barbizon-Plaza Hotel, New York, Sept. 15-16.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.
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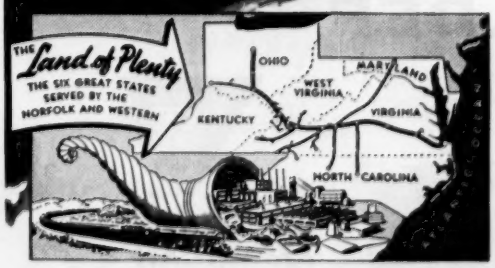

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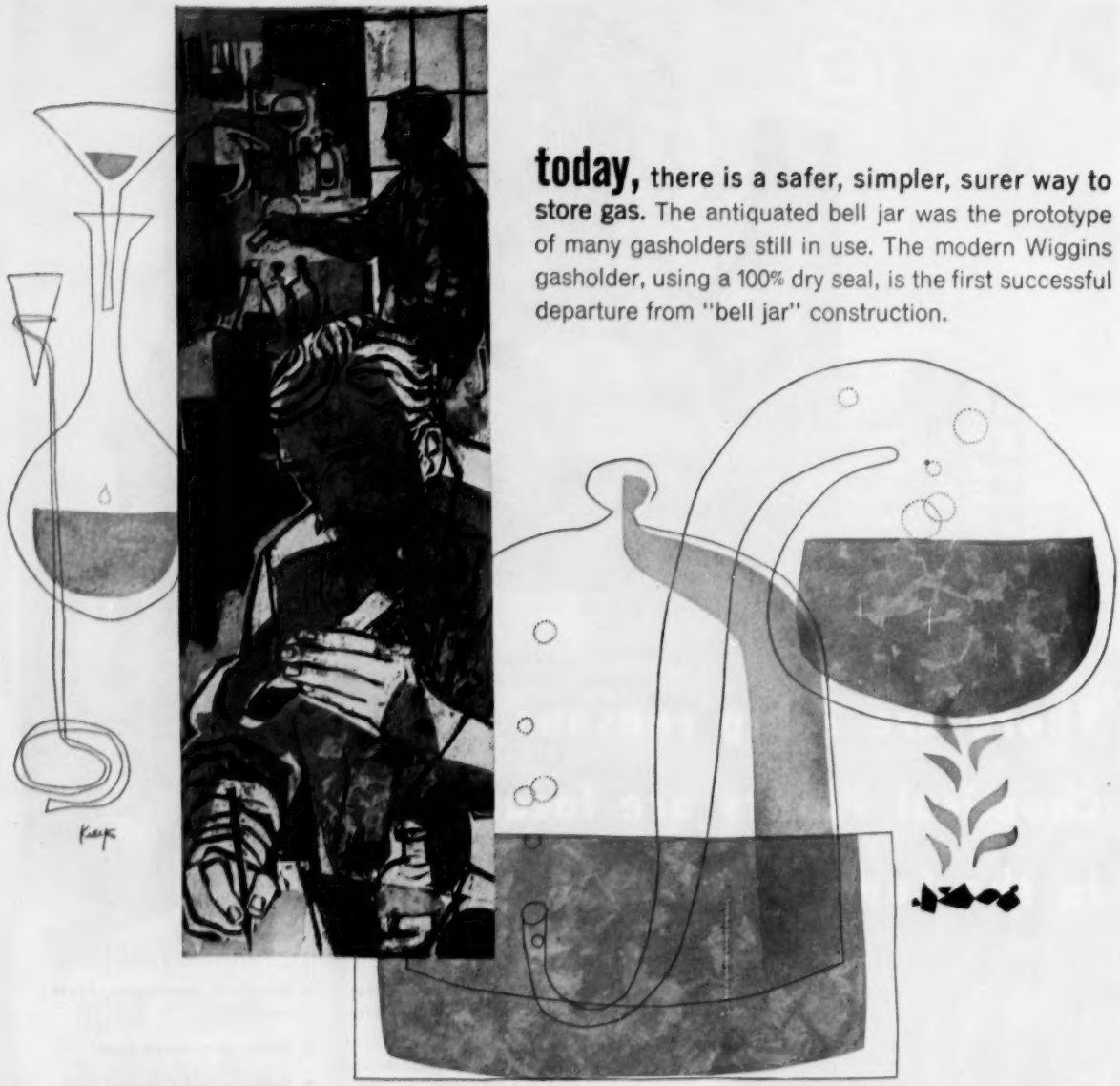

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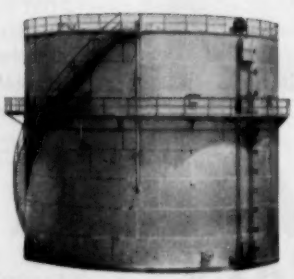

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NEWSLETTER

With healthy economic weather at home, chemical executives this week are taking more than slight interest in chemical developments abroad.

National Lead Co. (through its subsidiary, Canadian Titanium Pigments, Ltd.) has decided to build a $15-million titanium oxide plant on the south bank of the St. Lawrence River, 15 miles northeast of Montreal. The plant's output should be sufficient to meet Canada's entire requirements for titanium pigments—now imported almost entirely from the U. S.

•

In Tokyo: agreement by Mitsui (the rapidly expanding Japanese chemical cartel) to join the Pacific Coast European Conference—effectively ending an international potash import hassle—has rung up a significant victory for American potash producers. Mitsui, pressed by dwindling markets and rising production rates, has been considered a tough-to-handle holdout; U. S. companies had privately expected a long, drawn-out series of negotiations to settle the ticklish question.

•

In Great Britain: doubts as to the future of the British chemical industry (which were fairly widely held a year ago) seem to have completely faded away.

A rising demand for chemicals of all types, from plastics and paints to heavy chemicals, has spurred expansion; if current plans are implemented, chemical output by next January will be double that of 1946.

Two other indicators of the state of Great Britain's chemical industry today: exports for the first five months of 1955 were up 21% over the comparable period a year ago; Imperial Chemical Industries' plants (for the first time since World War II) are operating at full capacity.

•

In Ceylon: a government request for capital and technical assistance to exploit mineral sands (composed largely of ilmenite, rutile and zircon) has a number of U. S. firms interested.

Two proposals have been offered by Ceylon officials. Under the first, a concessionaire would pay a royalty/ton for removal of the raw material sand from the area for refining *outside* Ceylon. Under the second, a limited company could be formed in Ceylon to refine the sand *inside* the country.

Joint participation of Ceylon and foreign capital would be required in either case; the extent of foreign participation would be decided by negotiation.

•

In Italy: Montecatini (the world-active chemical colossus) has been authorized to receive $2,070,000 from the Export-Import Bank in Washington to build a resin plant near Milan. The over-all cost of the plant is $8 million; Export-Import's loan will specifically be used to buy machinery from U. S. equipment makers.

•

In France: tentative agreement has been reached between U. S. and French government representatives on exemption of patents, supporting blueprints, etc., from an 8.59% French government "turnover tax."

Expected chiefly to affect U. S. drug producers, the exemption would be allowed on all patents on which a French company has financed development—would be barred on those to which the French firm has *bought* rights. Final wording of the agreement comes up for approval after Sept. 20.

•

Meanwhile in Washington: The Commerce Dept. has just released a set of figures pointing up the importance of foreign markets to U. S. chemical companies in 1954. Highlights of the report (World Trade Information Service Report, 55-27, Part III): 29.6% of all resins, 30.9% of all sulfur, 11.1% of all phenol, 27.3% of all penicillin, 66.2% of all DDT, 45.6% of all copper sulfate, 28.5% of all carbon black is finding foreign buyers.

•

In another late report to retiring FTC Chairman Edward Howrey (*see p. 13*) General Counsel Earl Kintner says that the commission is currently checking on all the cease-and-desist orders (1,400 of them) issued over the past year. Some of his orders, Kintner says, haven't been obeyed; so the entire lot is being rechecked to single out all offenders.

On the subject of mergers: FTC's investigation didn't end with issuance of its merger report (*CW, May 28, p. 14*). Now its looking into the different forms of mergers and acquisitions—and the way they have changed the structure of the acquiring company. Also under review: how such changed companies operate in markets affected by a merger.

•

Chemical wage rates are going up—from one end of the country to the other:

In Florida, a fifth phosphate company— F. B. Royster Guano—has come to terms with the International Chemical Workers Union, leaving three larger operators—International Minerals & Chemical, American Cyanamid, and U. S. Phosphoric—still strikebound. Royster employees will get an 8.58¢/hour package increase now, 4¢ more next July 1.

Du Pont is raising wages by 6-8¢ for hourly paid employees at Carney's Point and Deepwater, N. J., with comparable increases for non-executive salaried employees. At Niagara Falls, N. Y., a new three-year contract between Carborundum Co. and Oil, Chemical & Atomic Workers (CIO) calls for an immediate 6¢ general wage increase and 2.4¢ in fringe benefits, plus additional 5¢ annual improvement increases at the end of the first and second years.

•

Recent expansion and acquisition developments:

• Minnesota Mining & Mfg. Co. is negotiating to buy the Mica Insulator Co. (Schenectady, N. Y.). Agreement has already been reached with Insulated Products, Ltd. (London) to purchase 5,364 shares of Mica's 7,500 shares of outstanding stock. Completion of the deal rests upon 3M's ability to buy the remaining shares—distributed among several minority interests.

• Eleanora Chemical Corp. (recently formed subsidiary of Pantasote Co.) will build a polyvinyl chloride plant at Passaic, N. J. Estimated completion date: late 1956.

• Davison Chemical Division of W. R. Grace Co. has made arrangements to take over fertilizer manufacturing units of A. F. Pringle & Co., Inc. (Charleston, S. C.).

• Brin Chemical Co. has started construction of a plant in Tulsa, Okla., to produce phenol, xylenol, cresylic acids and kindred products. Output will be marketed on the East Coast and in the Kansas City area.

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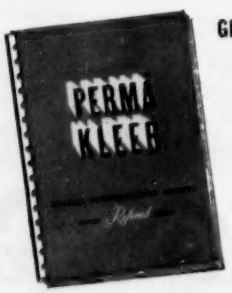

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BUSINESS & INDUSTRY . . . .

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AGREEMENT: Carbide's Dial (right) and agent Zeckendorf proclaim plans for . . .

New York Headquarters

Devotees of corporate ruralization received a stunning blow last week. Reason: Union Carbide and Carbon Corp. (New York)—the second largest strictly chemical firm in the U.S.—has selected the Big City over the suburbs for its new $40-million corporate home. (And that despite the fact it already owns property in Westchester County, purchased a few years ago.) Why the sudden turnabout? a move distinctly reversing the trend in present-day business thinking?

As a clue to the answer, Carbide offers these reasons:

• New York City, in the company's estimation, is still the most accessible spot for courting customers, contacting vendors, and capitalizing on special service facilities. Moving farther out of town could slow its pace, Carbide says.

• Almost 100% of the firm's 3,000 working force employed in New York offices live close to work (within a 50-mile radius). Pulling up stakes and moving to the suburbs—even as close-by as the Greenburg-Elmsford-Tarrytown area—would mean serious personnel upheavals. And that's a condition Carbide prefers to shun.

• Modern suburban headquarters on the scale Carbide requires (1 million sq. ft.) would range close in price to what the company will spend on its new 270 Park Avenue address. But out of town, a building of such magnitude would have to be custom-tailored. And should another move be required any time in the future, Carbide would "be stuck with a white elephant."

In contrast, the 41-story, entire block front property in New York will be a flexible, many-use unit that could be disposed of easily.

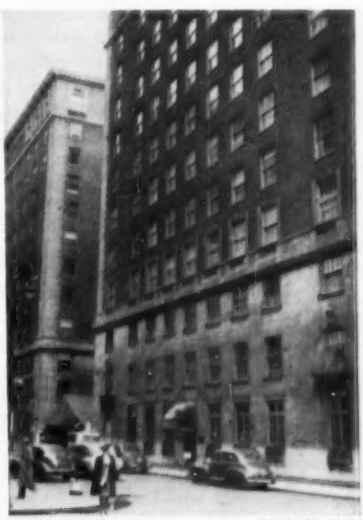
Option To Buy: Weighing these pluses against all other arguments, Morse Dial, Carbide president, has agreed to buy an option on the Park Avenue property now held by the New York Central Railroad. In turn, this will enable the firm to purchase a long-term lease on the site.

Scheduled closing date for the transaction is Oct. 28, '55, but because the old Marguery (once-famous New York palatial residence hotel) will have to be torn down before construction begins, Carbide occupancy of its new quarters isn't expected to take place until some time in 1958.

Then Carbide will shift 9 division and subsidiary offices from their present scattered locations (in 10 different buildings in the Grand Central area) to one skyscraper on the "boulevard of corporations."

According to William Zeckendorf, Webb & Knapp president (agent for the property), Carbide's price for the package is "the highest ever paid for two acres in the history of the world." Neither Dial nor Zeckendorf, however, will disclose the actual tab.

Further, says Zeckendorf, Carbide's decision is "the beginning of the end of corporate rustication . . . the most important single example of the switch to urbanization in recent years." Whether that trend will continue will keenly interest U.S. chemical industry in coming months.



ASSOCIATED PRESS

THE MARGUERY: Once-lavish hotel makes way for Carbide.

WIDE WORLD

KLEIN: Will go into the heart of uranium country to . . .

Crack Down on Brokers

In a spirit of dogged determination, two separate Washington committees are packing their bags this week—for a trip west to "study speculative penny stocks."

Rep. Arthur Klein (D., N.Y.), chairman of a nine-man Commerce Committee group, says his inquiry will give particular attention to the possible need for amending the Federal Securities Act—with respect to financing of promotional securities (especially in uranium ventures).

J. Sinclair Armstrong, chairman of the Securities & Exchange Commission, in equally forthright language, says that his special eight-man task force will be charged with the responsibility of probing into all recent stock sales in the Colorado-Utah area—in line with SEC's new get-tough policy.

Dilemma Unfolding?

Chief among the problems chemical executives face today is what to do about liability insurance. Wary insurance brokers now class chemical firms as "uncertain business risks"; it's becoming more and more difficult for the average company to protect itself against visitor accident claims. Especially strapped by the pinch: small firms that are finding "comprehensive" liability policies ($100,000-300,000 for bodily injury, $25,000 for property damage) harder to get.

One company treasurer states the problem flatly: "It's widely known today that the chemical industry is riding the crest of a lightning expansion wave. That has caused some firms to overlook visitor safeguards . . . has in turn brought the industry into prominence as a suspicious insurance risk."

Open-house days (the delight of all public relations directors) have made the problem of what to do even worse.

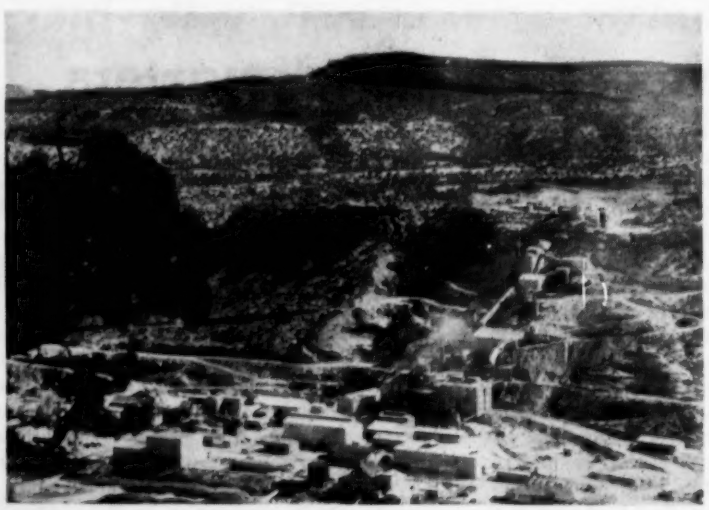
To protect themselves (and allay possible catastrophic claims in case of a major plant disaster while visitors are on company property), some companies are taking out special spot policies (up to $1 million).

Others—mainly the large chemical companies—are choosing what is known as "retrospective ratings." They pay a "deposit" premium each year, which insurance companies adjust upwards or downwards depending on individual plant casualty experiences that year.

What's Paying Off? Large or small, however, chemical company public liability insurance in coming months will only be granted with favor to those chemical companies that:

- Pay prime attention to visitor safety. That means taking all possible precautions to protect "licensees" (salesmen, and individuals calling on business) and "invitees" (the general public). Insuring groups look favorably on: roping off dangerous areas, selecting routes away from danger, providing guides to prevent straying, use of safety and protective clothing.
- Effect precautions to minimize "attractive nuisances." This calls for taking steps to deter uninvited children from being attracted to company property where injury might be incurred.
- Institute a "metals program." That's the technique petrochemical industries are perfecting to determine in advance the useful life of equipment.

Companies that choose to overlook any of these "musts" are bound to find the liability insurance coverage prospects dim; those that observe them, at best, will find the pickings slim.



Upping Output at Uravan

FOLLOWING SIGNING of a contract with the Atomic Energy Commission last week, Union Carbide Nuclear Co. (Division of Union Carbide and Carbon Corp.) released plans to expand uranium processing capacity at Uravan, Colo. (*above*).

Already one of the largest uranium processing units on the Colorado Plateau, the mill should be in full operation by fall, 1956.

COST OF INTERNAL CONFLICT

(Showing ICWU's loss of members and money following last year's dissension and 'revolt')

Fiscal year ending June 30	Initiation and reinstatement fees ($1 each)	Average membership*	Net financial gain or loss
1951	19,882	61,600	$68,690
1952	21,575	75,600	107,896
1953	23,213	84,200	40,454
1954	26,232	91,200	27,436
1955	10,567	79,500	—108,304

* Based on total receipts from per capita tax, $1/month.

Unity—Spurred by Revolt

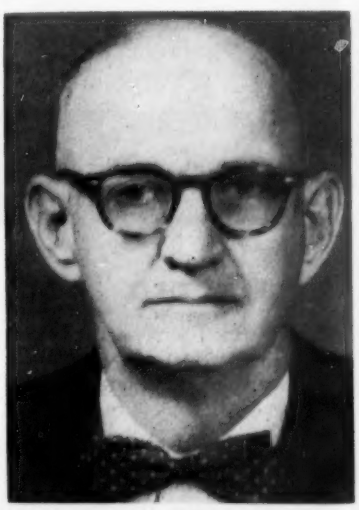
A chemical union that took a battering during the past year (see table) is now freely admitting that it's in the mood to consider merging with a union that used to be a deadly rival. For chemical management, such a merger would mean that companies would be bargaining with a new organization, an "unknown quantity"—larger, stronger, and probably more militant than any union in the industry before.

This week, International Chemical Workers Union (AFL) is setting up a committee that will meet with representatives of CIO's Oil, Chemical & Atomic Workers for preliminary parleys on unification. Conceivably, these talks could lead to a formal merger proposal to be voted on at ICWU's next convention, which will be held in Albany, N.Y., in Oct. '56.

Money Talks: The decision to go into those preliminary discussions was made by delegates to ICWU's 12th annual convention, held last week in St. Louis' Jefferson Hotel. It came after President Edward Moffett (a) reported on the union's monetary and membership troubles over the past year, and (b) read a telegram from OCAW officers, who urged that exploratory talks on unity be started even before the AFL-CIO merger that's expected to be consummated this December.

It was apparent that the delegates had economic motivations, as well as organizational zeal, in voting for merger negotiations. A larger union might be able to win them higher wage increases and other benefits than their present group; a larger union might be able to provide better service and support for their local unions; and in a larger union, there'd be more dues-paying members to share the overhead expenses.

What hurt ICWU was the drive by an "Emergency Reorganizing Committee" to take over ICWU locals. The ERC—a rebel outfit launched in the wake of the bitter dissension at last year's ICWU convention in Chicago—was founded by ex-ICWU organizers whom Moffett castigated as "Trotskyite traitors." He charged that their mutiny was encouraged first by former ICWU President H. A. Bradley, later by District 50 of the United Mine Workers. "No one should have any scruples in raiding District 50," Moffett declared, indicating that an interunion war is well under way.



ICWU'S MOFFETT: For union's setbacks, he raps 'Trotskyite traitors.'

Joint Action Hailed: Second most important development at the St. Louis convention: ICWU's formal endorsement of the move for joint action of various local unions through company-wide councils and industry-wide councils. This action reversed the policy of the former president, who favored strictly plant-by-plant bargaining.

Delegates approved a proposal to attempt to get—through collective bargaining for employers' contributions—comprehensive medical and dental care programs for employees and their families. They voted down a resolution for an industry-wide apprentice training program.

Antitrust Scorecard

In a report to retiring FTC Chairman Edward Howrey last week, the director of the commission's Bureau of Litigation (Joseph Sheehy) reports a marked increase in antitrust activities. The 36 antimonopoly complaints made in fiscal 1955 year were a 28.6% increase over the average of the previous 10 fiscal years; and the 30 antimonopoly orders were a 40.2% jump in deceptive practice changes.

More significantly: chemical process firms are right in the forefront of the record. Of five pending cases labeled "most significant" by Sheehy, two involve process firms. FTC has charged that Union Bag and Paper Corp. monopolistically controls Hankins Container Co., a competitor; and that Crown Zellerbach Corp. has participated in illegal mergers.

Other CPI highlights of the Sheehy statement:

- A recap of filed cases include misrepresentation efforts against vitamin and mineral preparations, kidney pills, and preparations for hair and scalp (including alleged cures for baldness).
- A rundown of 20 complaints and 18 orders issued in enforcement of wool product labeling agreements, and six complaints issued under the Flammable Fabrics Act.

EXPANSION . . . .

Hardboard: Columbia Veneer Co. (Seattle, Wash.) will build a $500,000 plant at Everett, Wash., to produce hardboard from cedar waste.

The plant, due in operation within a year, will have a capacity of 75 tons/day of board, will process from 30-50 tons of cedar waste initially, with ultimate needs expected to exceed 100 tons/day.

•

Ammonia: Heavy construction work starts this fall on U.S. Steel's anhydrous ammonia plant near Provo, Utah.

Initial units will include:

- A 200-ton/day ammonia plant using the Montecatini ammonia synthesis process.
- A nitric acid plant.
- A fertilizer-grade ammonium nitrate plant.

•

Petrochemicals: Magnolia Petroleum Co. will start work on a $25-million six-project construction program this month at Beaumont, Tex.

Major part of the expansion is aimed to provide additional facilities for manufacture of high-octane gasolines and distillate products. But also included are plans to build units to process butanes and propanes for marketing as liquefied petroleum gas and for use in gasoline blending.

•

Carbon Black: Witco Chemical Co. will construct new carbon black producing facilities at Eunice, N.M. Capacity: 25 million lbs./year of SRF (semireinforcing, furnace) carbon black.

COMPANIES . . . .

Pittsburgh Consolidation Coal Co. has acquired the Newark, N. J., plant of Reilly Tar & Chemical Corp., and plans to start construction of a cresylic acid refinery immediately. Over-all investment: $3 million; estimated date of completion: mid-1956.

Recent incorporations (all in Delaware):

- United Rubber & Chemical Co., listing capital stock of $10 million.
- General Lithium Corp., listing capital stock of $30,000.
- Continental-Diamond Fiber Div. (Budd Co.), listing capital stock of $3 million.
- Mid-South Chemical Corp., previously chartered in Tennessee, authorized capital stock, $6 million.
- Chemical Co. of America, authorized capital stock, 150 shares, no par value.

•

Headquarters staff of the Diamond Black Leaf Co. (recently purchased by Diamond Alkali Co.) have been transferred from Richmond, Va., to Cleveland, O.

Product development and research activities will continue to be maintained in Richmond.

•

Standard Lime & Cement Co. (Baltimore) has purchased the brine wells formerly held by Michigan Chemical Corp. at Manistee, Mich.

Henceforth, Standard Lime (a subsidiary of American Marietta Co. of Chicago) will supply magnesium chloride to its nearby magnesium refractory plant from the wells, will also supply brine to Michigan Chemical for use in that company's bromine production operations.

•

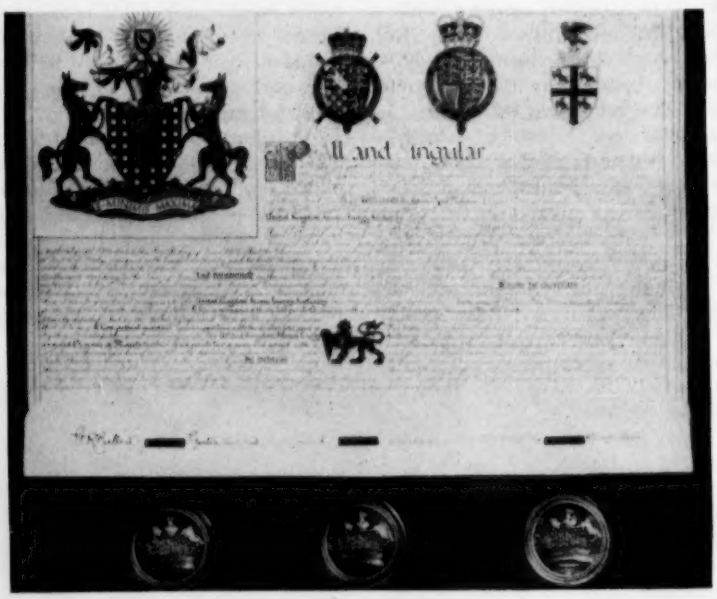
Chas. L. Huisking & Co., Inc., has formed a new company, Clinton Chemical Co., to handle manufacturing operations at its Brooklyn plant.

Clinton will manufacture vitamin oils, camphor tablets, and other specialty chemicals—including alkaloids.

•

American Enka Corp. is offering its stockholders the right to subscribe to 237,798 shares of additional common stock in the ratio of one new share for each 4.7 shares held of record Aug. 16.

The common stock offering is the first public financing American Enka has attempted since it was founded in 1927.



In Modern Time, Ancient Custom

IN THE BEST medieval traditions, Britain's Atomic Energy Authority this week is displaying its own Patent of Arms—the same privilege accorded knights of the realm.

Like all good crests, AEA's is meaningful. Two heraldic beasts chained to earth signify atomic power leashed; stars on each beast have 92 points (uranium is element 92). Inside the sun, a bird (from the late Lord Rutherford's coat of arms) pays homage to Britain's renowned nuclear physicist. The BAEA arms' motto: *e Minimus Maxima*—the most from the least.

IN THIS FIELD?	NEED THESE CHEMICALS?	
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Lubricating plastics and elastomers; raising melting points of waxes, asphalt, etc.; waterproofing electrical insulation; anti-mar compound for paints; lubricating steel wire drawing.	Synthetic Wax, M.P. 140-143°C	"Acrawax" C
A new, efficient brominating agent.	Dimethylbromohydantoin	DMBH
Highly reactive, suggested for epoxy resins and synthetic pharmaceuticals.	Ethylenediamine tetraacetonitrile	EDTN
Protective, moldproof, flexible coating for foods and food wrappers.	Acetylated Monoglycerides	Aldocet®
Insecticide concentrates; plastisol and organisol stabilizers; pharmaceutical and cosmetic emulsifiers; latex paint leveling and defoaming agents; pigment dispersants; wetting and penetrating agents; textile lubricants; paper defoaming agents.	Non-Ionic Surfactants	

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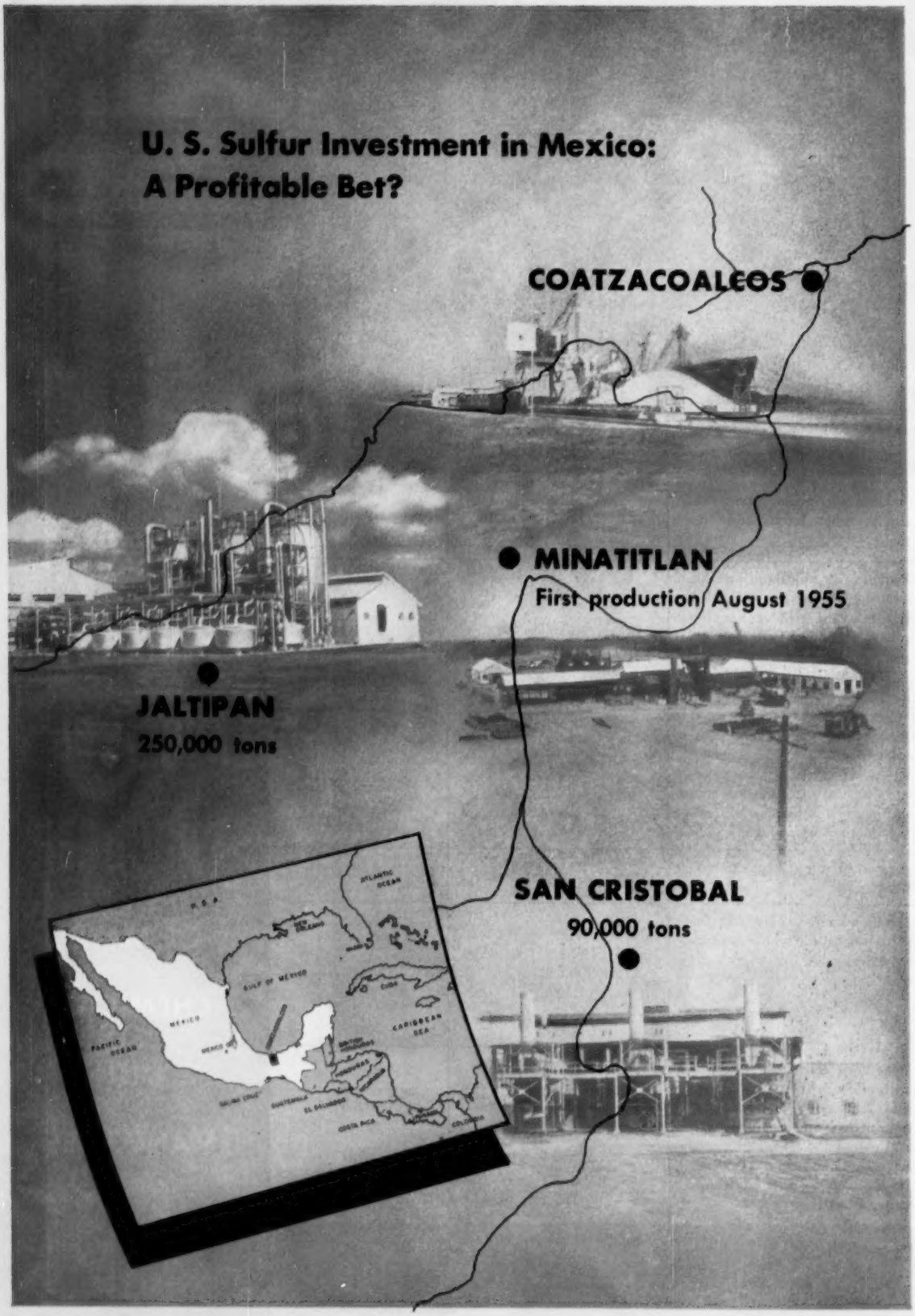
U. S. Sulfur Investment in Mexico:
A Profitable Bet?
COATZACOALCOS
MINATITLAN
First production August 1955
JALTIPAN
250,000 tons
SAN CRISTOBAL
90,000 tons
U. S. A.
ATLANTIC OCEAN
GULF OF MEXICO
CUBA
CARIBBEAN SEA
MEXICO
PACIFIC OCEAN
HONDURAS
GUATEMALA
EL SALVADOR
COSTA RICA

Jungle Empire Now Abuilding

After a slow start marred by discord, injured national pride, and rumors of meager reserves, Mexico's sulfur industry today is off and running.

With a strong assist from U.S. capital, there's every indication that by 1975 the country of sombreros and enchiladas will also be known as the world's sulfur capital.

Thanks to a healthy combination of dogged persistence and plentiful U.S. capital, the Mexican sulfur industry is today on its feet. Frasch process plants are running at three different locations on the Isthmus of Tehuantepec; by next summer, U.S. companies alone should be turning out more than a million tons of the valuable mineral annually.

Mexican nationalists are also asserting themselves in the sulfur-producing race. Heretofore, all sulfur operations in Mexico were primarily American—which irritates Mexicans. Now, however, the highly nationalistic Secretariat of the Economy has just granted 37,065 acres "in the sulfur belt" to a Mexican firm called Azufres de Mexico—a concession that reportedly covers three sides of the Texas Gulf Sulphur Co. holdings near the Coachapan River, and touches Pan American Sulphur property on the north.*

If current plans are realized (and U.S. observers predict they should), that could mean a fifth sulfur producer in Mexico within the next 18 months.

Impact on U.S. Producers: Just what the emergence of Mexico as a major sulfur-producing competitor will mean to the U.S. is, of course, largely conjectural. But European consumers have been openly courting Mexican sulfur makers in recent months; they view this new source as a safeguard against possible shutoff of U.S. exports.

Industry sources in the States claim that Mexican output, for the moment at least, will simply add to the zest of world competition, will not cause a problem of oversupply.

But even die-hards now admit that with considerably more than 50 million tons of sulfur already proved up, Mexico, within the next 20 years, could well become the world's major producer.

Rough Time Starting: Development of sulfur domes in Mexico has been a torturous task.

Aside from the inaccessibility of the jungle terrain in which the domes are located, fuel (to heat the water necessary for Frasch process mining) and transportation have been big stumbling blocks—past which all producers have had to beat their way.

Prime example of what this means is reported by Mexican Gulf Sulphur Co.—a U.S.-financed firm, founded in 1944.

Mexican Gulf's plant is located at San Cristobal dome in the state of Veracruz—some 16 miles by water from the city of Minatitlan and 36 miles from the port of Coatzacoalcos. Since the start of production (March '54), the company has turned out over 95,000 tons of sulfur—15,000 tons of which have been sold on the domestic market. More than 50 wells have established a known reserve of 3.8 million tons; probable reserve estimates run up to 10-15 million tons.

But to ship its product out of Mexico, the company had to build deep-water port facilities on the Gulf of Mexico (completed earlier this year), and was obliged to build 500-ton insulated barges to transport the molten sulfur to ocean-going freighters.

Pan American Sulfur Co. (operating through its subsidiary, Gulf Sulphur Co. de Mexico, S.A.) had an equally strenuous experience getting two wells (with 600-tons daily production) in operation. Proved reserves indicate over 27 million tons of sulfur are present at Jaltipan, but to date Pan American has produced only 250,000 tons. Reason: since Jaltipan is not located on a navigable river, it was necessary to build a system of gondola cars from mine site to port.

Shipments for 1955, however, are expected to total more than 175,000 tons; in 1956, the company (with 10 wells in operation) should be producing some 400,000 tons, largely for export to England, France, Australia, Sweden, Germany, India and the U.S. And making the present outlook even more promising: Pan American has built its port facilities to handle movement of 500 tons/hour of sulfur when ships are available, is probing production possibilities at Teterte.

Gulf Sulphur Corp.—the last of the "Big Three" U.S.-owned companies to get under way—started initial production this month. Its $2.7-million plant is situated near the city of Minatitlan, on the Salinas dome; proved reserves indicate the presence of at least 11 million long tons of sulfur.

Initial production is planned for a minimum of 750,000 tons/day; sulfur from five wells will be pumped to a relay station for barging to storage vats at Coatzacoalcos. But despite its severe time handicap, Gulf Sulphur could be the firm to watch. Its dome is said to contain the richest formations of sulfur thus far found south of the border; plant facilities built to handle some 1.5 million gal./day of heated water have been engineered to increase to 4 million gal./day—if required.

Still Considering: Texas Gulf Sulphur Co., world's largest sulfur producer, is said to be still considering whether its Tehuantepec deposits can be mined at a profit—meanwhile is pursuing an active exploration program in Mexico.

It's a sure bet, however, that if Texas Gulf decides to move, it will do so quickly—in terms of a multimillion-dollar investment.

That means the budding sulfur empire amidst the jungle could explode overnight into prime importance—as the world's major source of supply.

And U.S. investors—who a few short years ago were the butt of gentle ribbing—will be right in the driver's seat.

* Joker in the deal: Azufres de Mexico acknowledges that both capital and technical assistance will be sought in the U.S.

PRODUCTION, TO DATE, CENTERS IN THE ISTHMUS OF TEHUANTEPEC.

COOPER ALLOY

CORPORATION BRIEFS

• Edited by GEORGE BLACK

ENGINEERING DATA BOOK

Another section of the new Cooper Alloy catalog being readied by the Valve and Fitting Division is now available. Referred to as "Stainless Steel Engineering Data," this 16 page manual includes a variety of tables and charts of reference value for those who work with stainless steel valves, fittings, pipe, tubing or castings. Your copy is waiting.

ADVANCED KNOW-HOW #1

The full story behind the Shellcast® stainless steel jet engine support rings being turned out by the Foundry Products Division of Cooper Alloy is told in Advanced Know-How Report #1. The problem, the specifications and the solution are covered in detail with text and photos. Write for your copy.

PUMPING ETCH ROOM SOLUTIONS

Transferring acids and salt solutions used in the Etch Room of Litho Chemical & Supply Co. caused repeated pump failure and constant shaft seal maintenance. Five years ago a Vanton plastic pump (no stuffing box, no shaft seals) was put into daily service. Customer reports "no maintenance except lubrication." Full story appeared in Chemical Processing (July). Reprint available on request.

QUIKUPL DATA POPULAR

Since the publication of the May issue of Newscast which featured this patented fitting, the requests for additional data have been pouring in. In case you missed the issue, may we remind you that copies are still available. Full engineering data, case histories and photographs are included, making it possible for you to see for yourself just how this unique stainless steel fitting can cut your installation and operating costs.

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Control on Water?

KENYA, land of recurring water problems, is misting its reservoirs and dams with a molecule-thick film of cetyl alcohol this year in an all-out attempt to save hundreds of millions of gallons of water from evaporation.

Imitating similar trials by the Commonwealth Scientific and Industrial Research Council in Melbourne, Australia, the East African Meteorological Dept. (responsible for the project) claims the film is harmless to humans and fish-life, and is helpful in mosquito control.

Small pellets of cetyl alcohol are floated on the surface of the water in copper mesh baskets; one pound of the pellets emits enough film to cover an acre of water.

How important this scheme could be to the East African colony is evident from a late Meteorological Dept. observation:

Evaporation rate in Nairobi (in 4-ft.-diameter evaporation pans) averages 50%/day—up to 70% on very hot and sunny days. And rainfall, at best, is sporadic.

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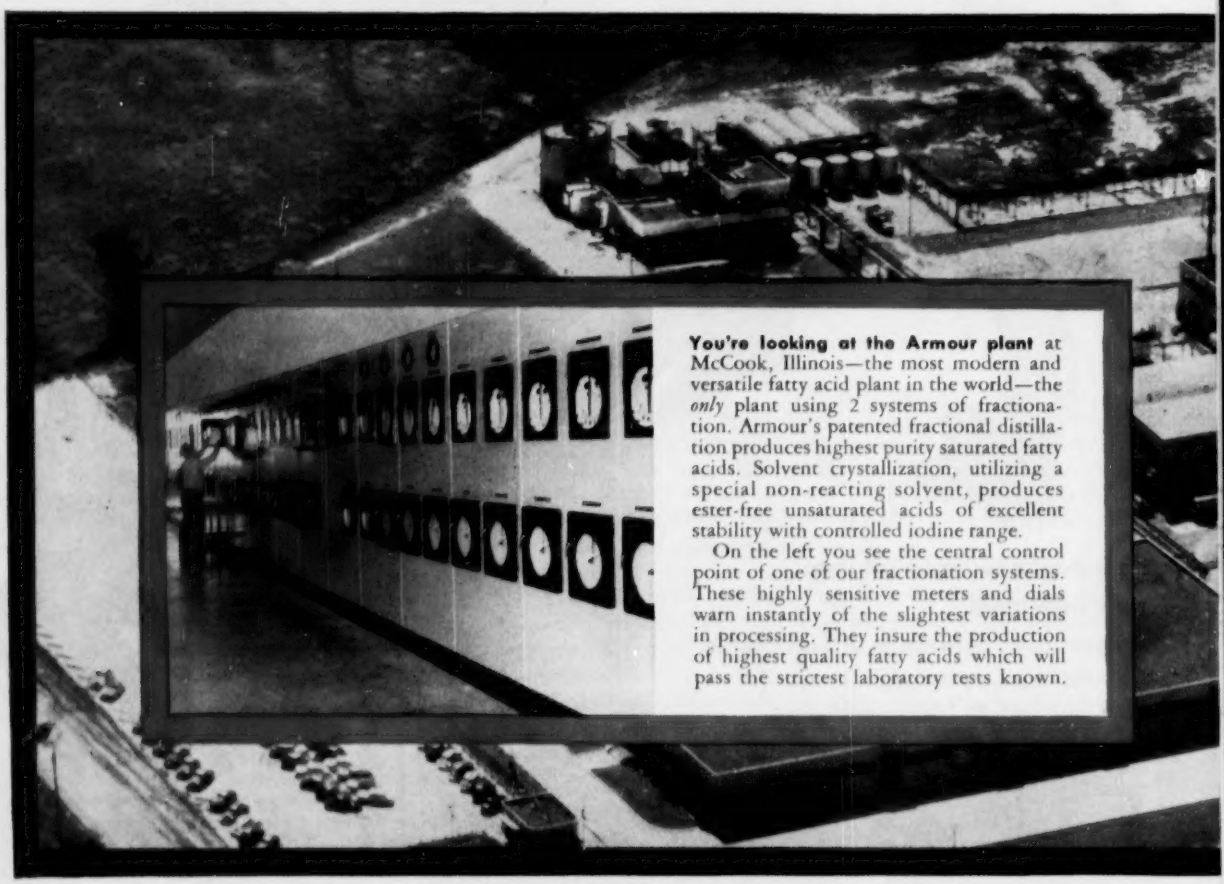

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On the left you see the central control point of one of our fractionation systems. These highly sensitive meters and dials warn instantly of the slightest variations in processing. They insure the production of highest quality fatty acids which will pass the strictest laboratory tests known.

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You can order a specific Neo-Fat without buying other mixed-in acids that are wasteful or harmful to your formulations. The Armour line includes saturated fatty acids from 8 carbon chain lengths through 18, as well as various unsaturated acids. Order either by specification or by composition. The booklets and chart offered at right will help you find ways to put Armour Neo-Fats to work for you. Put the coupon in the mail today

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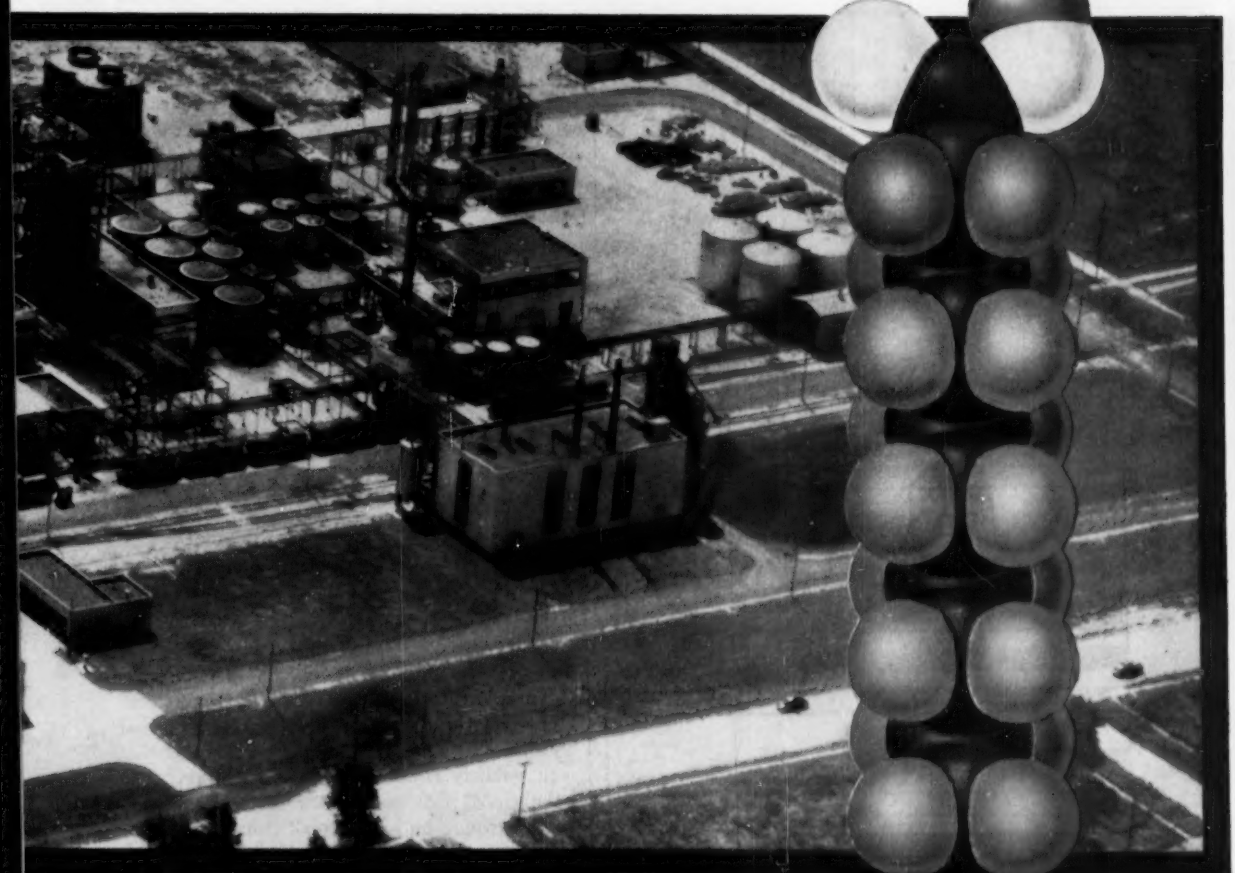

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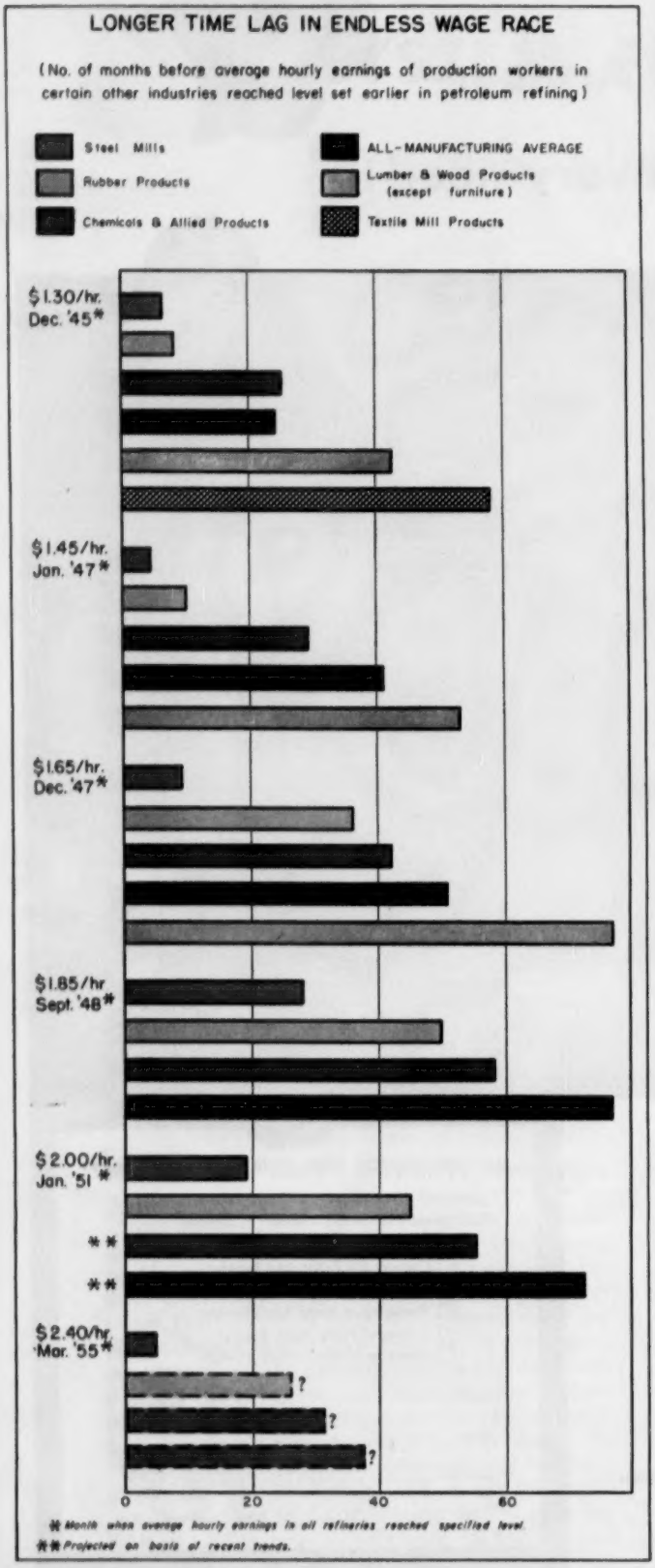

New Chemical Wage Factor: Union Rivalry

New cause for concern about rising labor costs is confronting chemical process management this week. It's the increasing impact on wages of the quasi-political struggle among leaders of organized labor.

There's always been brisk salary competition among individual companies for top-rung executives; and within each manufacturing community, there's competition among the various plants for skilled and industrious production and maintenance workers.

But up to now, chemical companies have been relatively little affected by the strife among union leaders on a nationwide scale to out-do each other on wages and fringe benefits. Now—with AFL and CIO chemical unions about to be merged into one large union that will be striving to take members away from United Mine Workers' District 50 and other independent unions—it looks as though the pressures of "union politics" may force the AFL-CIO chemical union to drive for wage rates close to those in auto and other pace-setting industries.

Personal Rivalry: Latest and most flagrant example of the kind of rivalry that's spurring union chiefs in contract negotiations these days: last week's settlements between two big can manufacturers and United Steel Workers (CIO). In those agreements, there's a modified guaranteed annual wage clause that—according to USW President David McDonald—is much better than the one adopted in last June's Ford and General Motors contracts with United Auto Workers (CIO). The fact that McDonald strove to get this benefit and that he publicly boasted about its "superiority" to the UAW plan makes clear that McDonald is still carrying on his personal campaign to discredit UAW President Walter Reuther—who nosed out McDonald in the 1952 CIO presidential election.

It's safe to predict that Reuther and McDonald will try to get the edge on each other every time GAW comes up in bargaining. McDonald has already said he'll demand a "real" GAW—not a modified version—in next year's steel negotiations.

You can expect this kind of interunion competition to intensify during the coming months, now that labor unions are consolidating. There'll be as many office-seekers as ever, but fewer top offices to go around—hence, probably still more vigorous jostling among union leaders for headlines and prestige.

More, Keener Contestants: It used to be that most of the broad-scale competition for high wages was among such groups as locomotive engineers, construction craftsmen, coal

How up-to-date are you on **Bauxite?**

In addition to being the raw material foundation of the aluminum industry, bauxite and its derivative chemicals also have important applications in other industries.

Bauxite and alumina, for example, are used in the manufacture of grinding wheels, abrasive stones, abrasive cloths and papers. The refractory industry uses them for making bricks to stand up under extreme high temperatures. Alumina is also an ingredient of spark plugs, vitreous enamels and glazes. It is used as a filler material in composite flooring . . . for removing moisture from the air in the control of humidity . . . for electrical and laboratory porcelain . . . as a catalyst in many chemical reactions.

Other chemicals derived from bauxite are used in such industries as: paper and pulp, textile, rubber, pharmaceutical, petroleum, chemical and allied industries.

Aluminium Limited, producer of one-fourth of the free world's aluminum, is able to supply bauxite and its associated chemicals to other industries. We will be glad to furnish you with information on the various grades and types available. Write to Aluminium Limited Sales, Inc., 630 Fifth Avenue, New York 20, N. Y.

ALCAN CHEMICALS FOR INDUSTRY

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- Chlorine, Liquid
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- Fluorspar
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ALCAN

Aluminum Chemicals

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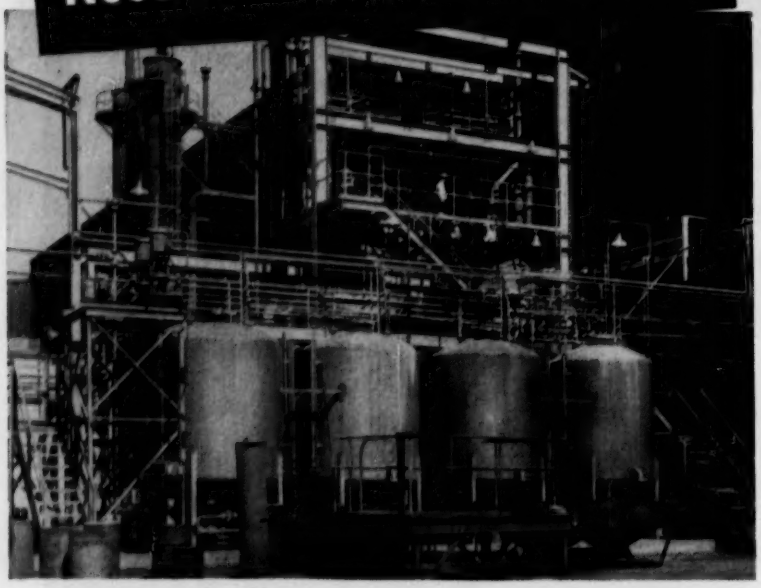

3 good reasons for calling in Ferguson

First, you benefit in *speed and economy* through the Ferguson single responsibility contract for engineering, building, and equipment installation services.

Second, our long and specialized experience in the chemical and related fields brings to the job the methods and skill that assure *maximum plant operating efficiency.*

Third, every move that we make when working with a client is toward providing a facility that meets all requirements *at the lowest possible capital investment.*

We shall welcome an opportunity to discuss these advantages in terms of your requirements . . . without obligation to you, of course.

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miners, and ship builders.

Now certain unions in the manufacturing field have openly entered the endless race to gain higher wages faster (*see graphs*). Thus the oil workers pushed their average hourly earnings to the $2 level in Jan. '51; the steel workers reached that elevation 19 months later; and the rubber workers came to that point after another 26-month interval.

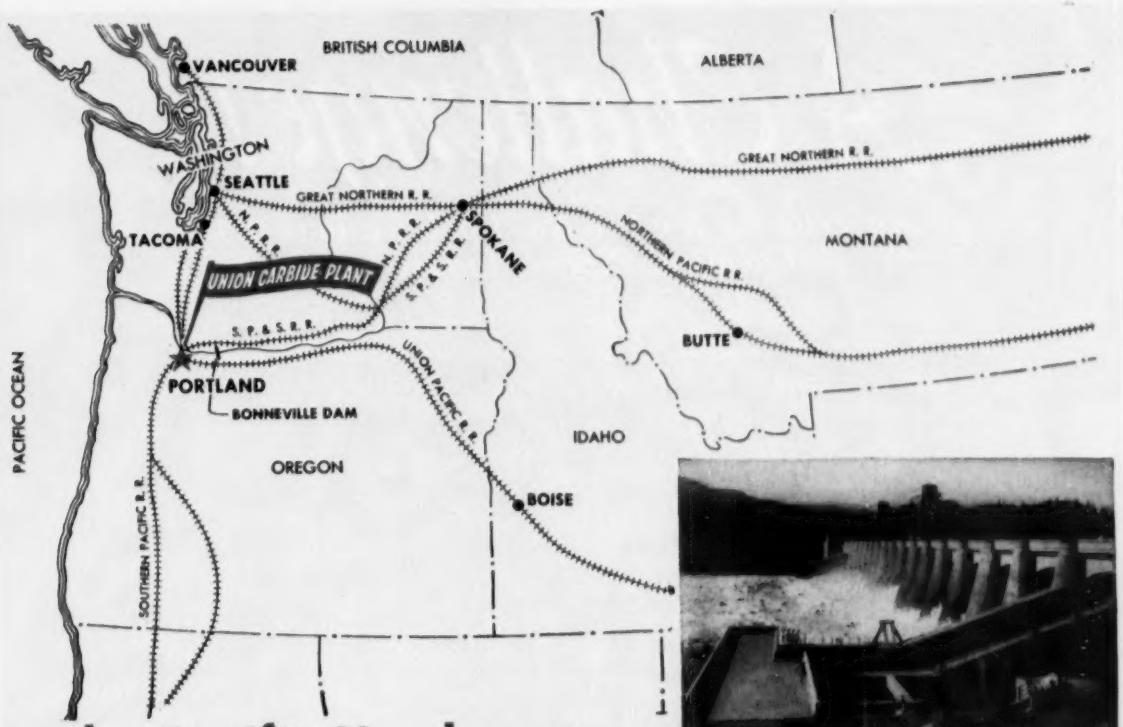
So far—although chemical workers' earnings have exceeded the industrial average—the chemical unions haven't been actively and consciously vying with the front-running labor groups in this race. There's been only an effort to keep chemical plant wages up to or above the prevailing pay scales in the community or in similar plants.

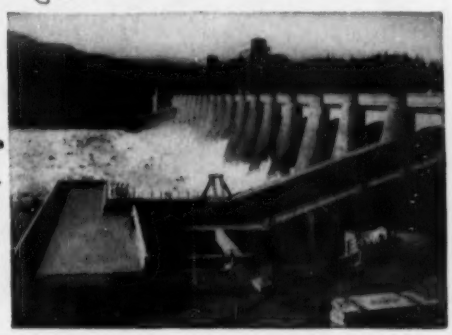
New Alignment Brings Change: But now the situation is changing. Chemical workers are being allied with oil workers, whose wage rates are among the highest in the country; and leaders of the combined union will want chemical wages boosted so that they won't hold down the average for the entire union.

In part, at least, this is because of the natural desire on the part of union leaders to want to make a good showing, to obtain recognition through election to high office in the new AFL-CIO. Traditionally, the way to advance in organized labor hierarchy is to build a reputation for organizing and bargaining.

Another factor: there's a feeling among labor's "big wheels" that the chemical unions haven't made enough headway in organizing the workers in their jurisdiction. There's likely to be a move for a housecleaning in chemical union offices if the new union doesn't pick up speed on this task. Best sales talk a union can give prospective members is data showing high wage rates for present members.

That these new pressures on chemical union leaders will be felt in future bargaining with chemical companies is a conclusion that's hard to escape. Whether this situation will cut down the lag on chemical wage rates—the interval before chemical earnings reach levels set in steel and other high-pay contracts—is highly uncertain, partly because there's no telling how leaders like McDonald may bear down to keep from falling behind in the race for high wages and glory.





For the Pacific Northwest... Volume Acetylene at Portland

Acetylene—an important raw material for chemical synthesis—can be supplied in large volumes at Portland, Oregon. If you are planning a new chemical plant in the Northwest, and will use acetylene as a raw material, consider the advantages of having acetylene delivered directly by pipe line. No generation equipment is needed at your plant.

Portland offers these advantages:

1. **Desirable Plant Sites.** Within piping distance of LINDE volume acetylene are many choice locations for your new plant in the Portland area.

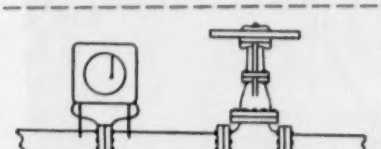
2. **Years of Experience.** Acetylene has been produced from UNION CARBIDE since 1898, and the many years of experience acquired in generating and handling acetylene are available to you at Portland.

3. **Favorable Transportation.** Plants located in Portland enjoy strategic transportation advantages. Five major railroads and a number of motor-truck lines serve the area. Portland also has the advantage of a deep-water harbor. Shipment of your products can be made by water between Portland and West Coast cities in the United States and Canada.

4. **Power at Low Rates.** Hydro-electric power can be purchased at economical rates. Bonneville Dam (pictured above) is nearby.

UNION CARBIDE is also produced at Ashtabula, Ohio; Niagara Falls, New York; and Sault Ste. Marie, Michigan. Bulk shipments to chemical users can be made from any of these plants, including Portland. Drum stocks for industrial users are maintained at 111 warehouses throughout the United States.

Whatever your plans or requirements, you are invited to telephone or write to LINDE'S CARBIDE-ACETYLENE DEPARTMENT for technical and sales information.



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Chemical Engineering

W. Alex Jordan, Editor
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P.S. If more convenient, you may obtain additional information from these regional editors:

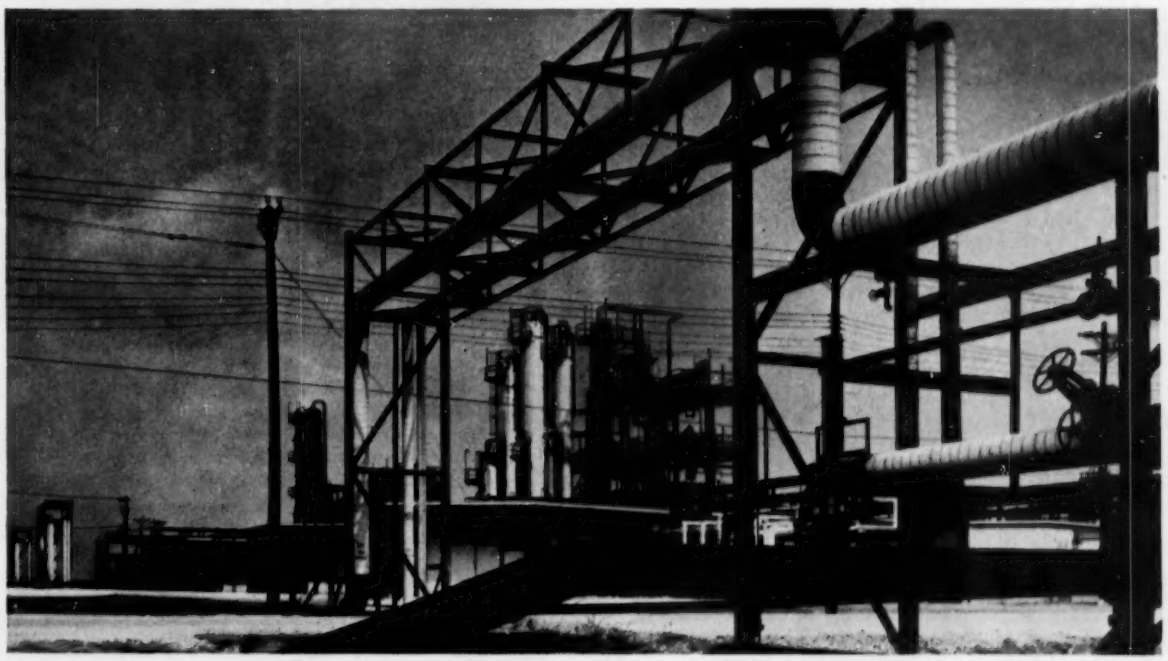
James A. Lee
1303 Prudential Bldg.
Houston 25, Texas

[illegible]

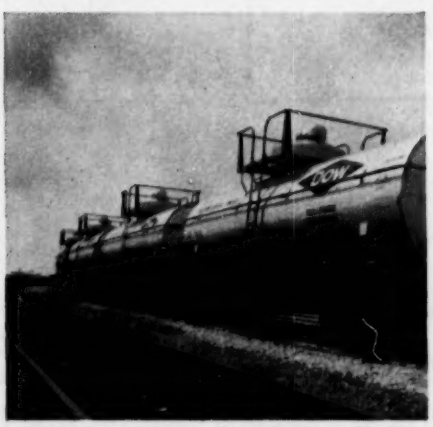
Elliot Schrier
68 Post Street
San Francisco 4, Calif.

DOW ON STREAM WITH GLYCERINE!

new supply of synthetic assures stability for glycerine users



Dow glycerine plant, with a rated capacity of 36 million pounds per year, provides an important new source of supply for industry.



Aluminum tank cars will provide fast delivery of quality-maintained Dow glycerine from several bulk stock points throughout the country. Shipments are also made in resin-lined drums and tank trucks.

The entry of Dow into this important field of manufacture is increasing the availability of synthetic glycerine and exerting a stabilizing influence on the glycerine market. Also a factor in stability is Dow's basic position—all raw materials required in glycerine production are manufactured by Dow.

This is good news for the major industrial users of glycerine—manufacturers of alkyd resins, humectants for tobacco products, dynamite explosives, and plasticizers in cellophane, adhesives and paper—as well as smaller but important users in 1,500 other applications.

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Typical of many drying processes done rapidly and efficiently with Rodney Hunt equipment is the production of powder from liquid concentrate as illustrated.

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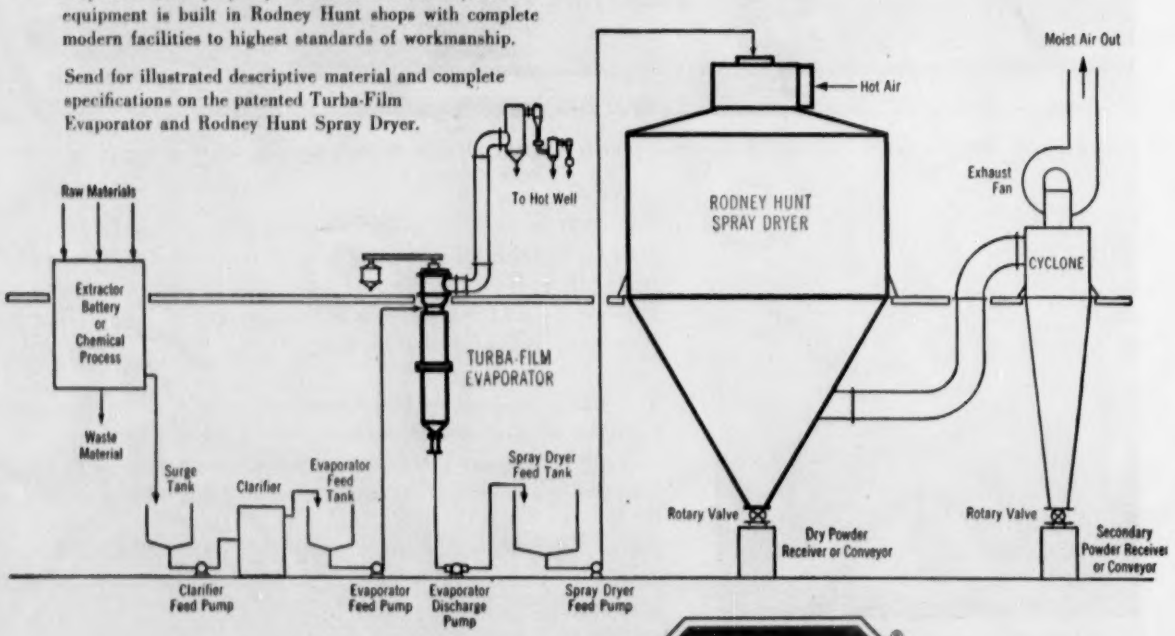
Rodney Hunt engineers make available to you the experience of years in the engineering of many evaporator and spray dryer installations. Rodney Hunt equipment is built in Rodney Hunt shops with complete modern facilities to highest standards of workmanship.

Send for illustrated descriptive material and complete specifications on the patented Turba-Film Evaporator and Rodney Hunt Spray Dryer.

Schematic drawing of Continuous Drying System shows Rodney Hunt Extractors, Turba-Film Evaporator and Rodney Hunt Spray Dryer for converting liquid to soluble powder. Extraction produces a true solution with low solids. The Turba-Film Evaporator reduces the solution to desirable higher solids. The Rodney Hunt Spray Dryer reduces the concentrated solution to a powder with the final desired low moisture content.



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WEST GERMAN CHEMICAL OUTPUT STEADILY CLIMBING

	First Half 1955 (tons)	First Half 1954 (tons)	% Gain
Sulfuric acid	884,980	821,444	7.7
Hydrochloric acid	76,720	67,847	13.1
Chlorine	194,776	174,876	11.4
Caustic soda	270,177	245,274	10.2
Nitrogen	401,398	338,520	18.6
Nitrogenous fertilizers	383,226	333,766	14.8
Phosphorus fertilizers	269,219	223,412	20.5
Calcium carbide	416,214	375,016	10.9
Mineral and tar dyes	233,566	206,705	13.0
Lacquers and paints	146,796	126,372	16.2
Phenol	4,764	3,803	25.3

FOREIGN . . . . . .

Production/West Germany: West German chemical output continues to climb steadily this year—but at a slightly less rapid rate than in 1954.

Most branches of the industry report brisk demand; particularly favorable production gains are being noted by the lacquer and paint, tar dyestuff, and soda industries.

On a total comparative scale: West Germany's index of chemical production now stands at 247 (taking 1936 as 100); in June '54, it stood at 215.

•

Fertilizer/India: According to latest plans of the Fertilizer Production Committee, India's contemplated Nangal fertilizer plant will cost $45.9 million, and will produce 340,000 tons of ammonium nitrate annually.

Capital costs include provision for manufacture of 7½ tons/year of heavy water as a coproduct.

At the same time, the committee declares itself greatly attracted to the possibility of utilizing spare gas from the newly installed oil refineries at Trombay (near Bombay) to produce nitrogenous fertilizers. It expresses regret that Standard-Vacuum Oil Co. has already contracted to sell part of this waste gas to privately owned companies for thermal power.

•

Potash/Israel: Completion of construction of a 200,000-ton/year potash plant in Israel is expected early next month. Builder of the plant: Dead Sea Works, Ltd. (Sdom).

Over $10 million has already been invested in the project, but company officials still face difficult working conditions.

Chief among those problems: that of a severe climatic handicap. The Dead Sea lies 1,200 ft. below sea level; summer temperature averages 104 F. To coax production workers into the area, the company is forced to provide transportation daily to Tel Aviv or Beersheba, thus increasing costs, cutting hours on the job.

Its source of raw material (Dead Sea brine) is virtually unlimited, however, and possible future products include bromine as well as magnesium compounds.

•

Lignite/Greece: The board chairman of the Hellenic Chemical and Fertilizer Co. (Athens)—the company that last month was awarded a contract to exploit lignite deposits at Ptolemais (Macedonia)—is in Germany this week to sign an agreement with Krupp for necessary capital investment.

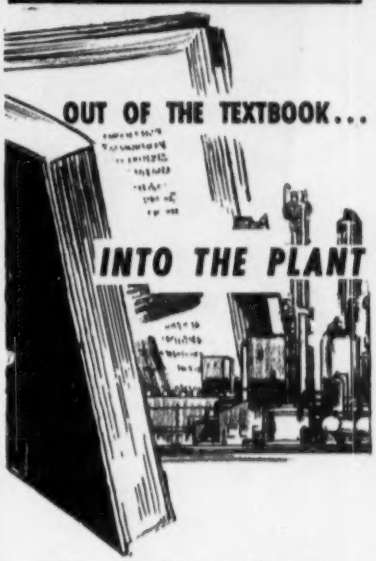
Hellenic Chemical will also negotiate with German financial circles for credits to build an electric power plant at Ptolemais.

•

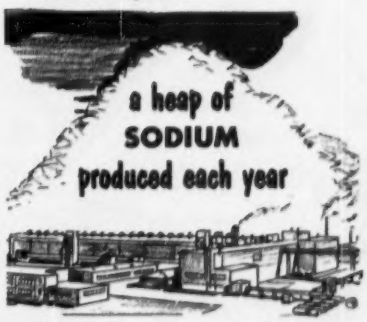
Paper/Brazil: A Franco-Israeli association plans to build a paper mill in Belem (Para) at the mouth of the Amazon River, with construction scheduled for early 1956.

keeping up with

SODIUM



Many potentially valuable reactions, like preparation of organosodium (R-Na) compounds, were once commercially impractical. They are practical now — with U.S.I.'s sodium dispersions — stable suspensions of microscopic sodium particles in inert hydrocarbon media. Greatly increased surface area cuts reaction times from hours to minutes, increases yields, permits lower temperatures and better control of reaction rate. New, economical routes to important chemicals have been opened.



¼ billion pounds of sodium are produced in the U. S. every year, putting it emphatically in the heavy chemicals class. This enormous consumption is not apparent because so much is used *internally* by producers. U.S.I. sells more sodium than all other producers and continues to pioneer in sodium research.

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For information on these products or assistance on any problem involving chlorinated products, write DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

PRODUCTION EQUIPMENT: Still lagging far behind Western standards.

A Peep Through the Curtain

With international attention centered on recent demands by Red China for four-power summit discussions, U.S. industrialists were wondering this week about the state of that country's chemical industry.

News is still relatively scarce, but some information, of late, has indicated that the Chinese are making a desperate effort to catch up (at a surface level, at least) with Western chemical progress.

Example of just such a move is seen in dispatches concerning the State pharmaceutical plant, now under construction at Shanghai.

Loudly hailed as the type of construction project the State can offer in the Peoples' Republic, the plant is being engineered to produce sulfathiazole, several other sulfa drugs. At present, equipment is being installed, workers trained to handle production chores—but in terms of U.S. standards, the plant is scarcely beyond pilot-plant size.

Other items of high public appeal are also currently planned for "immediate production"—among them synthetic fibers, polyethylene. But to date (as far as U.S. reporters can determine), the intent has failed to be translated into actual construction.

Basic Chemical Facilities Scarce: As far as production of basic chemicals is concerned, Red China would appear to have advanced but slightly over the past 15-20 years.

Sulfuric acid is in heavy demand from all sectors of the country; chlorine, caustic soda and heavy fertilizer-producing units are sorely inadequate to satisfy industrial and agricultural requirements.

Japanese traders, recently engaging in possible trade discussions with Chinese government officials, report that China is also extremely interested in import of insecticides, herbicides, and dyestuff chemicals.

Some Imports from USSR: To some degree, in recent years, China has been able to import a part of its chemical requirements from Soviet Russia—but that source would now appear to be drying up rapidly.

Probable reason: Russians themselves are badly in need of various chemical commodities; what they make at home, they need to use at home.

That means the Chinese government is on the spot. It must make its move in the direction of building up chemical reserves—and it must make that move soon.

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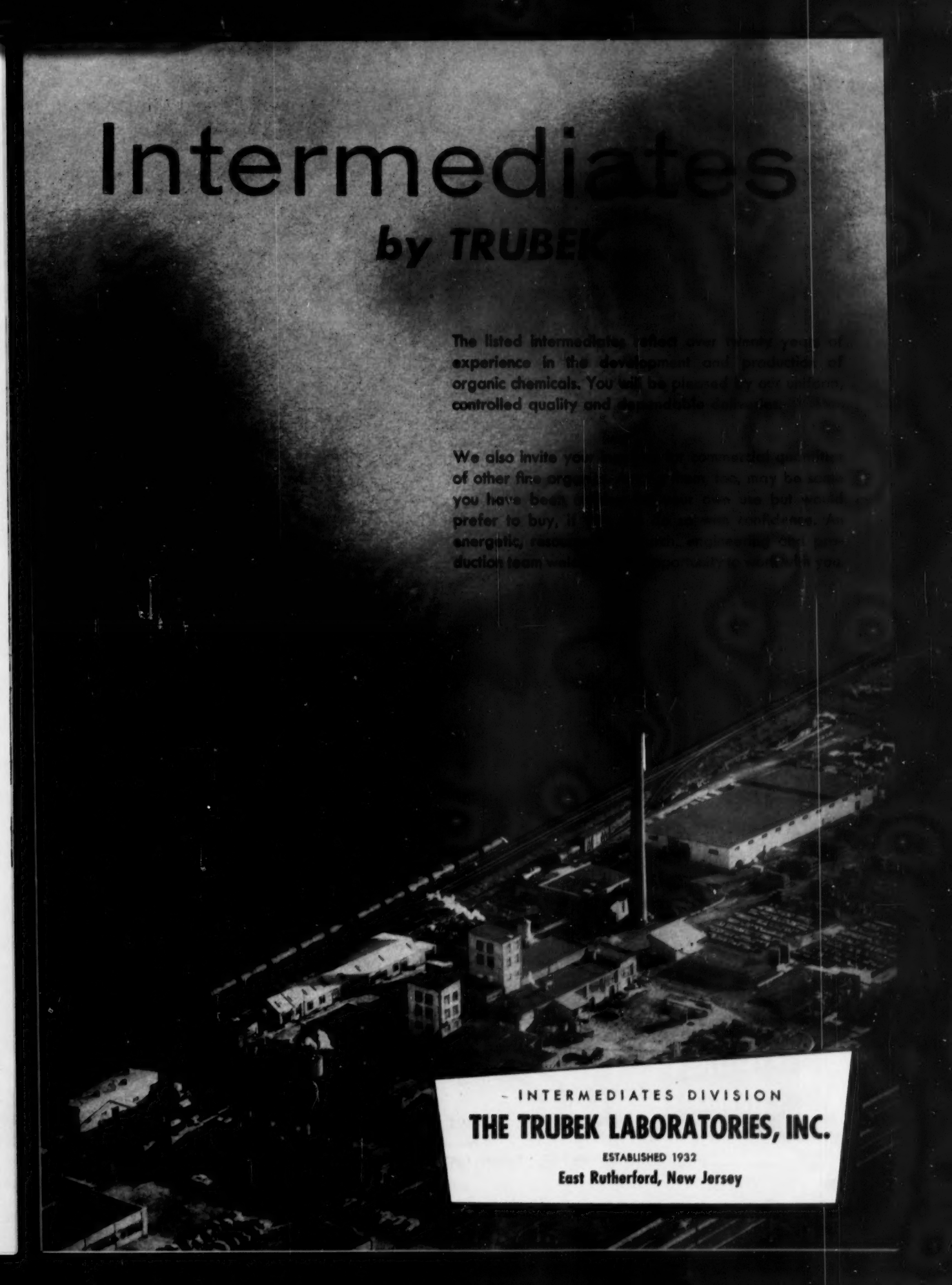
The listed intermediates reflect over twenty years of experience in the development and production of organic chemicals. You will be pleased by our uniform, controlled quality and dependable

We also invite your inquiries concerning our line of other fine organic chemicals which, too, may be useful if you have been using them. Perhaps you do not prefer to buy, but would energetic, research and production team



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caustic soda—

which strength should you buy?

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Can you save by switching from 50 to 73% liquid caustic? Your answer will depend on:

1. Your caustic soda freight rate.
2. Your facilities for handling caustic.
3. The amount of caustic you use.

Advantages of 73% liquid

1. With 73%, there is a substantial saving in freight charges. 63% less water is shipped per unit weight of dry caustic soda.
2. You will place fewer orders. This cuts down on your billing work.

Disadvantages of 73% liquid

1. It is priced $2.00 more per ton (dry basis) than 50% because of higher manufacturing costs.
2. If you store it as 73% liquid, you will need heated, nickel-clad steel storage tanks.
3. If you dilute 73% to 50% while unloading, you will need a cooler and other equipment. This represents a considerable investment which can be reduced if you have suitable equipment already on hand.

Use this table to see if you can save with 73%

Use the table at right to find your approximate saving on freight charges with 73% liquid caustic. The table balances two cost factors . . . lower freight charges and the higher initial price of 73% liquid caustic.

To estimate your yearly savings, multiply the figure in the right-hand column which applies to you by your annual consumption in tons (dry basis).

From these savings you will have to deduct the cost of equipment for diluting to 50% while unloading.

Freight rate per hundred weight in cents (including taxes)	*Net savings per ton (dry basis) in dollars*
5	minus 1.40
10	minus .80
15	minus .10
16	0
20	.60
25	1.20
30	1.80
35	2.40
40	3.00
45	3.70

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You gain much by choosing the *right* strength for your conditions. In coming to a decision, why not give yourself the advantage of unbiased expert technical help? A call to your nearest Hooker sales office puts at your disposal, without obligation, the experience gained in 50 years of supplying caustic soda to industry.

Your Hooker technical service man can show you what equipment you need for converting, and help you figure your exact savings. Why not phone or write him today at the nearest Hooker office?

* * *

"CAUSTIC SODA BUYER'S GUIDE" is the title of a new pocket-size booklet we will be glad to send you. Contains helpful facts on the economics of 50% and 73% solutions; other forms of caustic soda; capacities of tank cars and other containers; useful shipping information. Write for a copy.

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Reduction of Esters

acids, acid anhydrides,
and other functional groups with

MH Sodium Borohydride

Now, MH Sodium Borohydride, $NaBH_4$, will reduce esters, acids, acid anhydrides, and acid halides. These reductions can be easily and simply carried out in Glycol Ethers in the presence of Aluminum Chloride. Disulfides, nitriles, halides, and double bonds are easily reduced, too, by this new technique.

MH Sodium Borohydride will also selectively reduce aldehydes and ketones in the presence of these groups when water, alcohol or amines are used as solvents. Hindered organic compounds, not usually amenable to reduction, are easily reduced with $NaBH_4$, as are highly selective keto-steroid reductions.

Solubility Factor Good

Solvent	Solubility g/100g of solvent
Liquid Ammonia	104.0
Water	55.0
Ethylene diamine	22.0
Methanol	16.4 reacts rapidly
Dimethyl ether of diethylene glycol	(40°C) 11.0
Isopropyl amine	6.0
n-Butyl amine	
Ethanol	4.0 reacts slowly
Pyridine	3.1
Morpholine	1.4
Isopropyl alcohol	0.25 reacts slowly

Generally insoluble in ethers, hydrocarbons, and alkyl chlorides.

$NaBH_4$ Properties

TYPICAL ASSAY: 98.0%

THERMAL STABILITY: $NaBH_4$ is stable in dry air to 300°C.

STABILITY IN H_2O: At a minimum ph of 10, $NaBH_4$ is stable in water at room temperature. A more alkaline solution is required for stability at elevated temperatures.

STORAGE AND HANDLING: May be handled safely in air and is stable in dry air and to shock.

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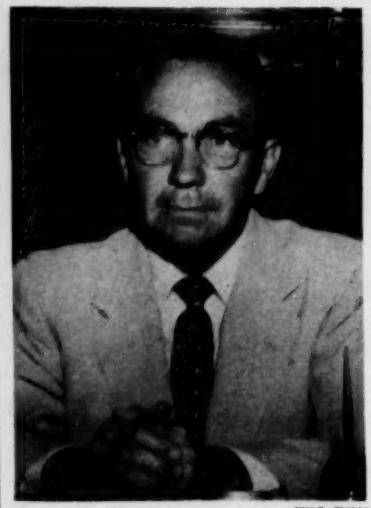

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JUDGE SAVAGE: On technicality, a violation of old price-control law.

LEGAL . . . . . .

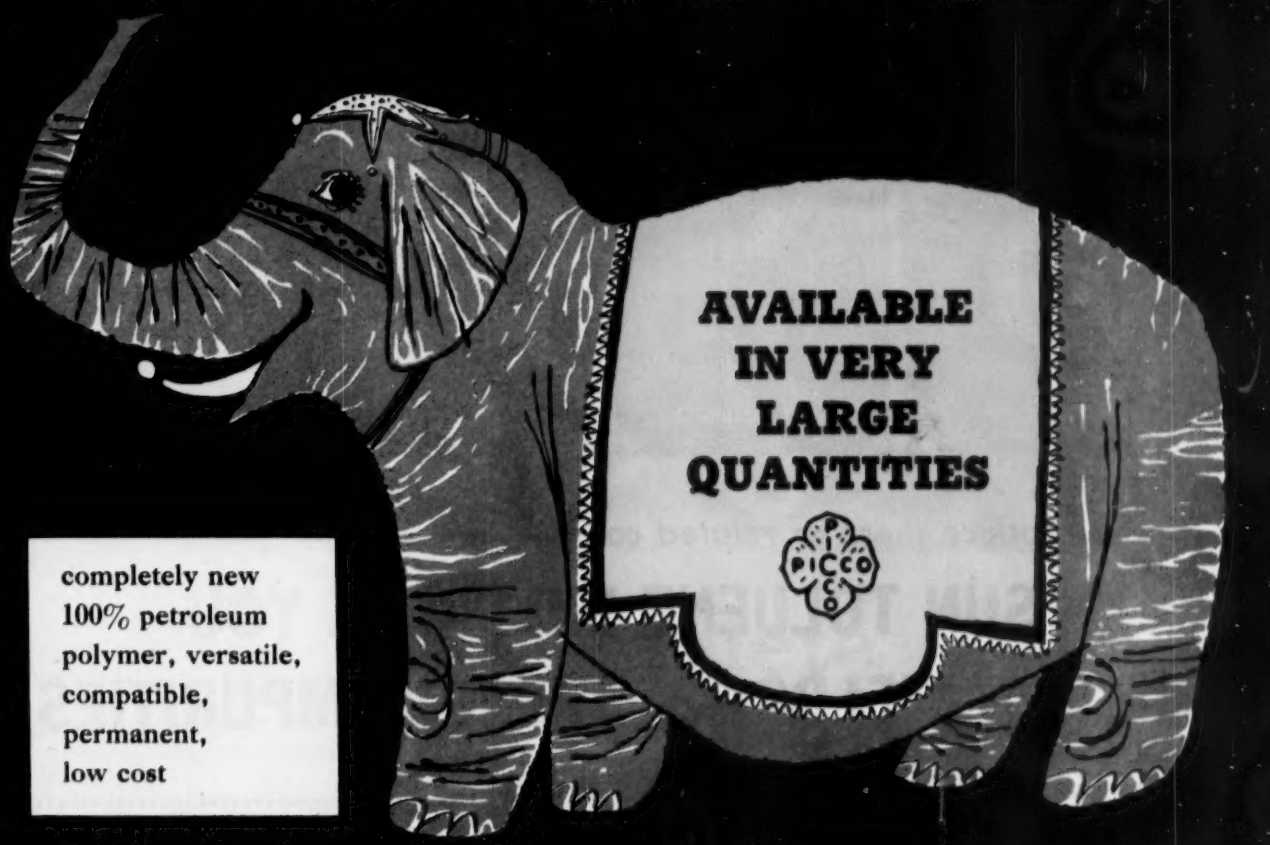
Price-Law Penalty: Price-control regulations of the Korean emergency are dead, but the government still has some unfinished enforcement chores; and one of these involves Phillips Chemical, which tripped on a technicality in billing for ammonium nitrate shipped from Oklahoma into Kansas and Arkansas. The government contended that by removing former freight allowances, Phillips in effect pushed prices above 1952 ceilings. In federal court at Tulsa, Judge Royce Savage awarded the government $131,262 judgment, but said he'd be glad if the appeals court "could find some other conclusion in the matter."

•

60 Days to File: Now that President Eisenhower has signed the bill passed by Congress just before adjournment to compensate victims of the Texas City blast disaster, some 300 claimants—mostly individuals—will have 60 days in which to file their bids for payments up to $25,000 each. The bill—as amended over its author's bitter opposition—bars payments to insurance companies, and is expected to bring settlement of all claims for a total of not more than $50 million. The Senate-House committee that cleared the bill refused to acknowledge "legal responsibility or negligence on the part of the government" for the explosion of fertilizer-grade ammonium nitrate on the Texas City waterfront in 1947.

Cut your materials costs with

PICCOPALE



completely new 100% petroleum polymer, versatile, compatible, permanent, low cost

The extremely low cost of PICCOPALE, and its availability in enormous quantities make this new type of petroleum resin ideal for use as a basic raw material in applications where previous types of resins were not practical. It is chemically inert—not affected by acids and alkalies; moisture-proof; compatible with waxes, rubbers, polyethylene, coumarone-indene resins, phenolics, rosins, many alkyds, vinyls, drying oils and many other materials. PICCOPALE is soluble in naphthas, chlorinated and other solvents. Available in liquid solution or in flaked or solid form.

WRITE for complete data, specifications and samples.

Technical Service

Pennsylvania Industrial Chemical Corporation operates an exceptionally well-equipped laboratory for technical research involving the use and application of Picco products. This Technical Service can be of great help in developing the best methods of using Picco products in your formulations.

Pennsylvania Industrial Chemical Corp.
Clairton, Pennsylvania

Plants at
Clairton, Pa., West Elizabeth, Pa., and Chester, Pa.

District Sales Offices
New York, Chicago, Philadelphia, Pittsburgh, Detroit

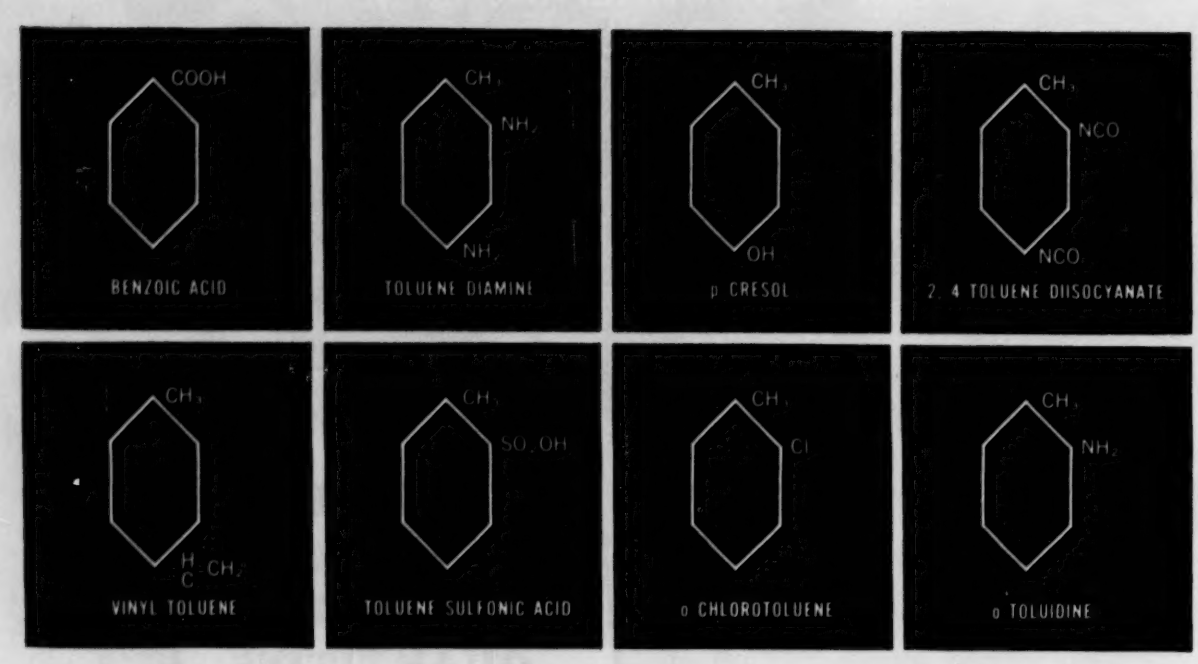
Pennsylvania Industrial Chemical Corp. (CW)
Clairton, Pennsylvania

Please send me a copy of your bulletin describing PICCOPALE and samples of grade for (application)_____

Name_____ **Position**_____

Company_____

Address_____



If you produce these or related compounds . . .

SUN TOLUENE WILL GIVE YOU HIGHER YIELDS . . . MINIMUM IMPURITIES

The increased use of toluene as a chemical raw material created the demand for a purer product. Sun met this demand last year when it built its new aromatics plant.

Since then, industries using new high purity Sun Toluene have been reporting increased plant efficiency . . . better quality in their finished products . . . increased life of many of their catalysts.

Sun Toluene has a purity (mol. percent.) of 99.9. The bromine index test, a most sensitive measure of olefins, typically shows negligible results. Typical results from the isatin test show that Sun Toluene is thiophene-free.

In addition, Sun Toluene is guaranteed to contain less than 0.5% paraffins . . . well below the ASTM maximum of 1.5%. *As a matter of fact, by the ASTM Test, Sun Toluene normally contains no paraffins whatsoever.*

TYPICAL TESTS

Paraffins	Nil
Bromine Index (unsaturates)	Negligible
Acid Wash Color, ASTM	1
Distillation Range	0.6 C incl. 110.6 C
Sulphur, Wt. %	0.001
Mol. % Purity	99.9
Thiophene (Isatin)	Negative

For complete specifications and more information about Sun Toluene see your Sun representative . . . or write for Technical Bulletin #27. Address SUN OIL COMPANY, Philadelphia 3, Pa., Dept. CW-8.

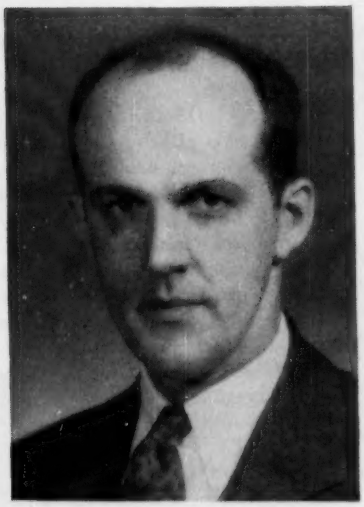
INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY

PHILADELPHIA 3, PA.

In Canada: Sun Oil Company, Ltd., Toronto and Montreal

SUNOCO



DARTMOUTH'S HILL: In college recruiting, tips on new tactics.

LABOR. . . . . .

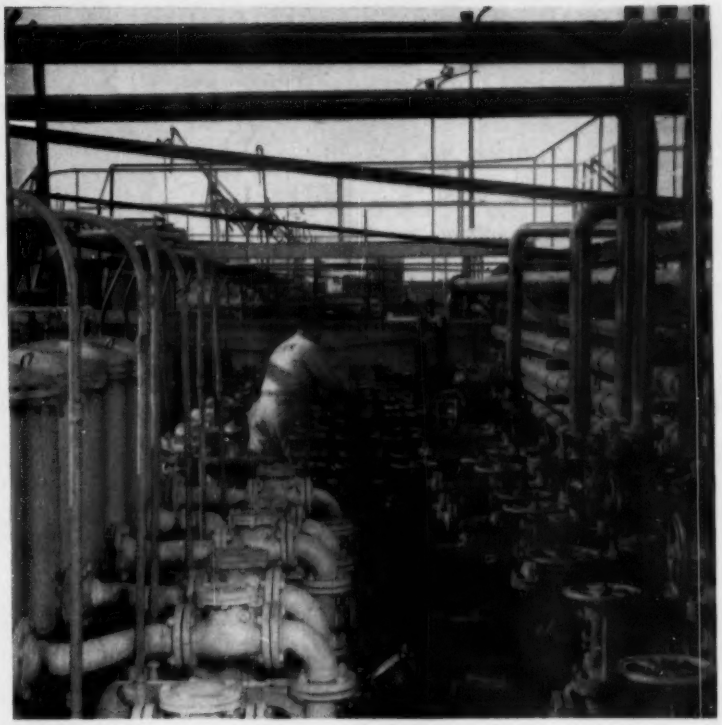
Arbitration Under Glass: By way of closed-circuit television, industrial relations people attending the fall personnel conference in New York next month (Sept. 26-28) will sit in as spectators while company and union lawyers argue out an actual grievance case before an arbitrator of American Arbitration Assn., whose decision will be binding.

Speakers on the three-day program sponsored by American Management Assn. will include Associate Dean Karl Hill of Dartmouth's Amos Tuck School of Business Administration, "A Hard Look at College Recruitment"; Ansul Chemical Co.'s President Robert Hood, "An Effective Cost Reduction Plan"; Sherwin-Williams Personnel Director Lena Ebeling, "Woman's Place in Tomorrow's Work Force"; and U. S. Steel Corp. Vice-President John Stephens, "Labor Relations in U. S. Steel."

•

Sugary Settlements: Substantially higher labor costs are seen in some of the recently signed chemical labor contracts:

- American Cyanamid's Organic Chemical Division and International Assn. of Machinists have agreed on a 12¢/hour wage increase for maintenance craftsmen and an 8¢ rise for their apprentices at the plant in Bound Brook, N.J. Next wage reopening will be Nov. 8, '56.
- A package worth an estimated



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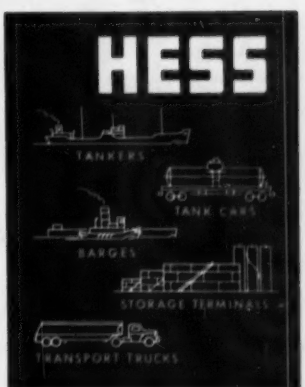
product privacy
for bulk liquids

Your liquid product stored at HESS is isolated from all other materials. HESS' individual pipelines, pumps and tanks can handle as little as 10,000 or as much as 10,000,000 gallons—with complete privacy—permitting storage that's wholly safe against contamination.

The HESS conveniently located bulk-storage plants in the New York Harbor and Gulf Coast areas, are equipped to store more than 400,000,000 gallons of chemicals, petrochemicals, petroleum products and other liquids.

At HESS your product is treated with the same personal care you'd give it yourself. It is received and released through modern piping, pumping and drumming facilities, via rail, truck, barge or tanker. Your product is under the constant supervision of experts.

You'll like doing business with HESS. Reserve your new illustrated book, telling the whole story of how your product will be handled and stored. Address your inquiry to our location nearest you so that we can give it immediate attention.



HESS, INCORPORATED
Perth Amboy, N. J.
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HESS TERMINAL CORP.
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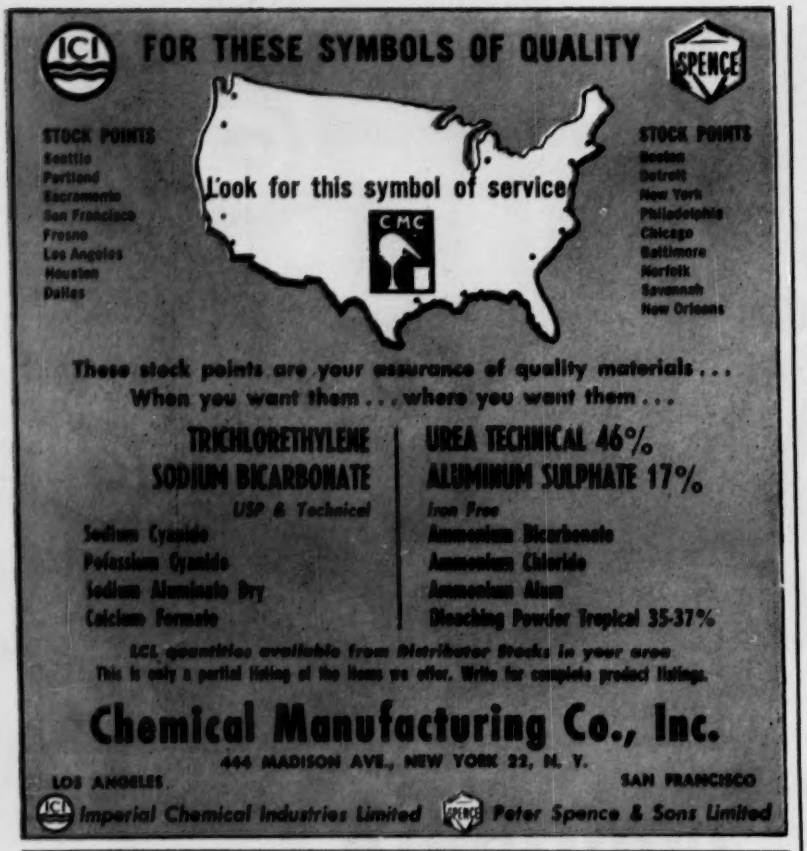


LOWER COST? DRYMET—anhydrous sodium metasilicate, provides more detergent power.
BETTER DETERGENCY? DRYMET puts more genuine colloidal punch into your cleaning compounds.
GOT A DETERGENT COMPOUNDING PROBLEM?
DRYMET
WILL HELP YOU SOLVE IT...
pH CONTROL? DRYMET buffers alkali. Pegs the pH where you want it.
and COWLES Know-How Will Help, Too
Years of experience in detergent manufacture—
Detergent research laboratories—
To use DRYMET more effectively
Send for this DRYMET File Folder
—Properties of DRYMET
—Recommended DRYMET Formulations
—How to improve your products
Cowles CHEMICAL COMPANY
7017 Euclid Avenue
Cleveland, Ohio

B & I. . . . . .

10¢/hour is the nucleus of a new agreement between A. E. Staley Mfg. Co. (vegetable oil processing) and United Auto Workers (AFL) at Decatur, Ill.

• Ending a 15-day strike at the Ozalid Division plant of General Aniline & Film Corp. in Johnson City, N.Y., AFL Machinists have ratified a two-year contract calling for one 4¢/hour increase retroactive to July 1, another 4¢ rise next March 1, and a third 4¢ boost Nov. 1, '56. Before the strike, average hourly pay in the plant was $1.90, the company said.

• A four-week strike by members of Oil, Chemical & Atomic Workers (CIO) has ended at Heyden Chemical's plant at Garfield, N.J.

•

Right-to-Work in South: Advocates of the so-called "right to work" laws have scored gains in two Southern states this month. In Kentucky, directors of Louisville's Chamber of Commerce unanimously endorsed a proposed right-to-work bill for next year's legislative assembly; and in Alabama, the legislature's House of Representatives refused to advance a bill that would repeal the state's present right-to-work law.

KEY CHANGES. . .

T. B. Nantz, to general manager, chemicals, B. F. Goodrich Chemical Co. (Cleveland).

Joshua S. Miller, to manager, automotive sales, plastics division, Monsanto Chemical Co. (Springfield, Mass.).

Raymond T. Ruder, to treasurer, and **Junius H. Cooper,** to controller, Vitro Corp. of America (New York).

James H. Boyd, Carl E. Ring, and **Robert J. Hull,** to directors, Brown-Allen Chemicals, Inc. (Carlisle, Pa.).

Lester S. Sinness, to assistant general manager, textile fibers, Du Pont Co. (Wilmington, Del.).

J. Douglas Campbell, to director, sales, and **Walter M. Fenton,** to director, product research and development, Lithium Corp. of America (Minneapolis).

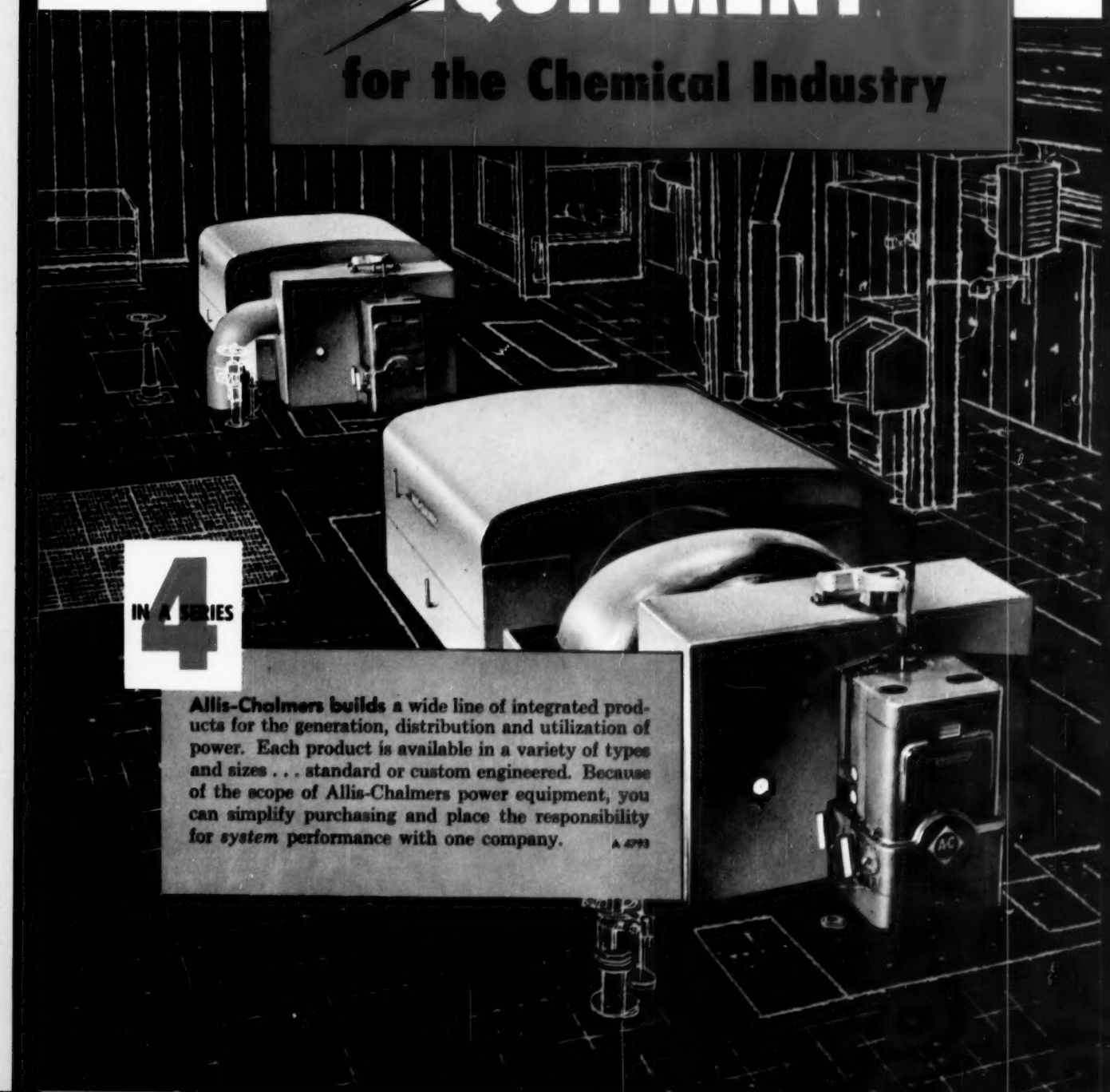
DIED. . . . . .

Frank A. Seiberling, 95, founder of Goodyear Tire & Rubber Co. and Seiberling Rubber Co., at Akron, O.

ALLIS-CHALMERS

POWER EQUIPMENT

for the Chemical Industry



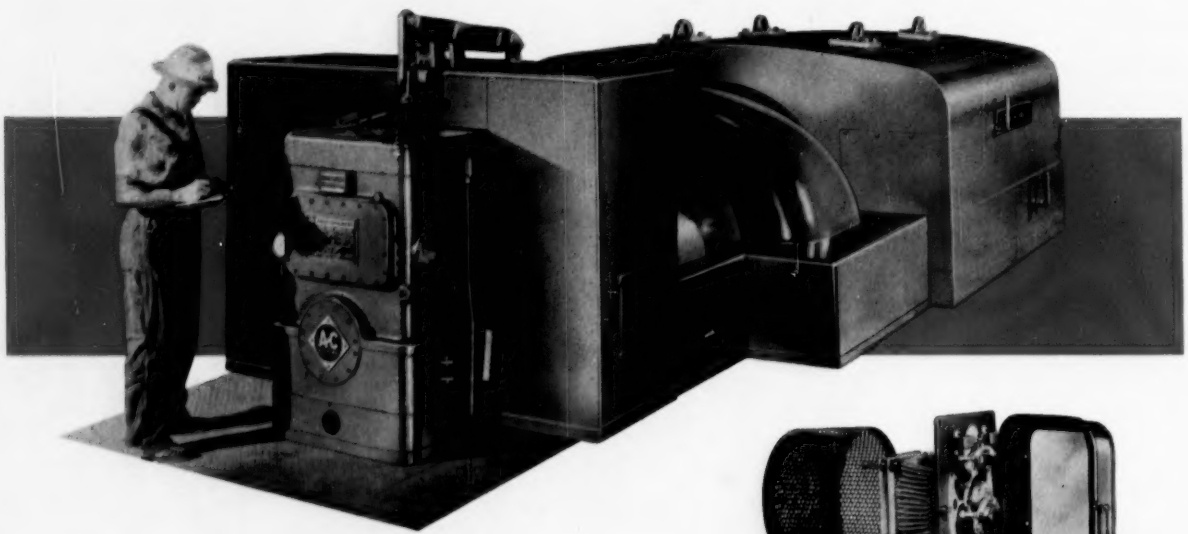
IN A SERIES 4

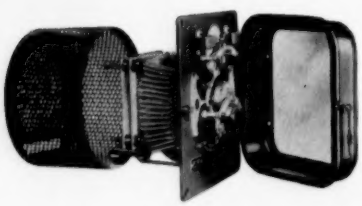
Allis-Chalmers builds a wide line of integrated products for the generation, distribution and utilization of power. Each product is available in a variety of types and sizes . . . standard or custom engineered. Because of the scope of Allis-Chalmers power equipment, you can simplify purchasing and place the responsibility for *system* performance with one company. A 4793

generation

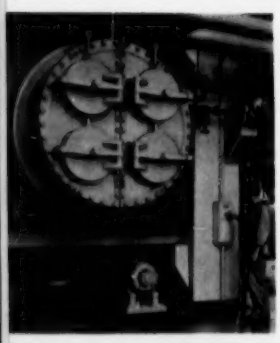
WA-SERIES STEAM TURBINE-GENERATOR UNITS

Available for either condensing or non-condensing operation with or without automatic extraction, these units combine an impulse steam turbine and housing-type air-cooled generator in a compact three-bearing arrangement. Features include labyrinth steam seals throughout, high chrome alloy steel buckets and time-proved governing system. Oil piping and simplified generator-cooling system are above foundation. WA-Series units are built in sizes from 2000 kw to 16,500 kw, inclusive.



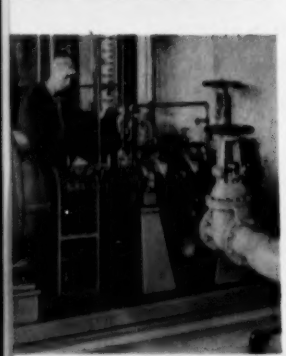


CONDENSERS



Allis-Chalmers condensers are available in rectangular, elliptical or round cross-sections. This choice of shapes permits maximum utilization of available space. Allis-Chalmers "Multi-Steam-Path" design insures efficient flow of exhaust steam throughout the entire condenser, making all sections active. Condensers are available in all sizes.

PUMPS



Allis-Chalmers builds centrifugal, axial and mixed-flow pumps for practically every power plant service . . . boiler feed, water circulation, condensate, heater drain, coolers, heating systems, etc. Sizes range from small compact pumps handling a few gallons per minute to huge units pumping 110,000 gpm.

Power Plant Voltage Control

In *Rocking Contact* voltage regulators, a small movement of the sector over a curved commutator covers the entire regulating range. No sluggish time-wasting relays. No vibrating or sliding contacts to wear out.

Type A Regulator — for ac generators, 125 kva at 257 rpm to 1750 kva at 3600 rpm.

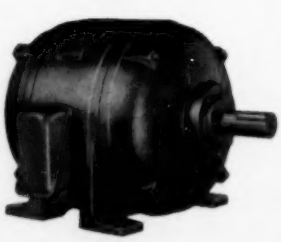
Type B Regulator — for ac generators, 1000 kva at 257 rpm to 6250 kva at 3600 rpm.

Type C Regulator — for ac generators from 3125 kva at 257 rpm to 25,000 kva at 3600 rpm.

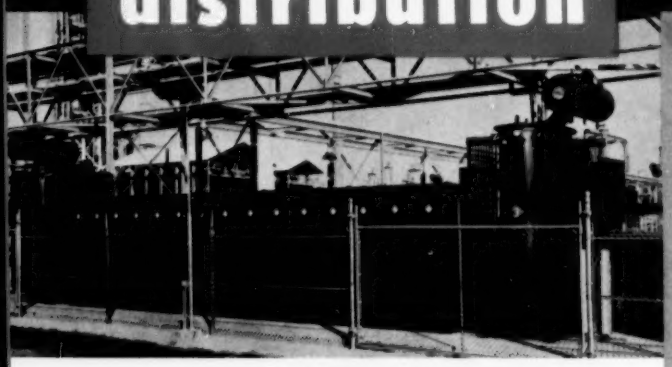
All have a guaranteed sensitivity of plus or minus 0.5%.

Motors for Power Plant Auxiliaries

Motors for every power plant drive are available from Allis-Chalmers—in the proper type and size to meet any operating condition. Illustrated is the Type AW open, drip-proof cage motor built in sizes from 100 to 800 hp. Other Allis-Chalmers power plant motors available in sizes from one to several thousand horsepower.



distribution



UNIT SUBSTATIONS

Switchgear is the key to power continuity demanded by chemical plant automation. Allis-Chalmers engineering has specialized in switchgear which offers the following advantages:

Saves Space — Compartments are designed to permit adding special transfer bus or ring bus without adding cubicles.

Saves Cost — By eliminating duplicate facilities or extra cubicles, Allis-Chalmers switchgear cuts equipment cost.

Saves Time — Dry-type bus joint insulation simplifies adding and removing cubicles. No compounds to melt . . . no fuss . . . no muss.

In the double-ended substation illustrated, switchgear is combined with duplicate Allis-Chalmers power transformers.

DRY-TYPE TRANSFORMERS

Installed close to the load center, Allis-Chalmers dry-type transformers provide correct utilization voltages for efficient motor operation, flicker-free lighting and full heating of thermal equipment. Long secondary runs are eliminated, distribution losses minimized.

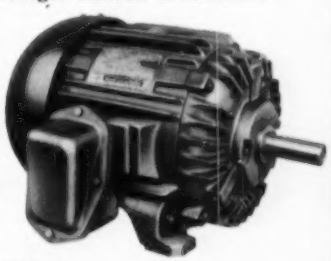
Allis-Chalmers dry-type transformers can be placed anywhere . . . on walls, platforms, posts — even on the machines they serve. No vaults are needed. Available in a wide size range — single phase, 200 kva and lower, 600 volts and below. Illustrated is the totally enclosed dry-type transformer rated 50 kva and smaller. This model is particularly applicable to dusty atmospheres. General purpose, hermetically sealed and open ventilated designs also are available.

utilization

MOTORS

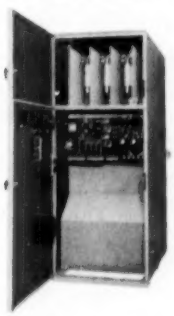
Allis-Chalmers builds standard and special motors for practically every purpose and in any capacity range. Illustrated is the totally-enclosed, fan-cooled, explosion-proof motor which is especially suited to chemical industry conditions. Frames are corrosion-resistant cast iron. Rib-type design provides ample reserve cooling capacity, no inaccessible air passages.

Improved bearing design affords maximum protection against foreign matter — facilitates in-service lubrication. Built in ½ to 100-hp range, these motors are now available in the new NEMA frame size standards.



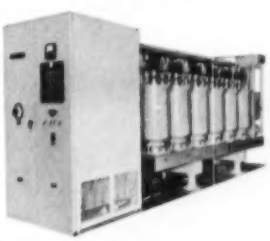
CONTROL

Allis-Chalmers offers a complete line of manual and magnetic, full and reduced-voltage starters. The Type H starter, shown here, is a high capacity motor controller with built-in short circuit protection. This starter provides complete control for 2300-5000 volt motors. Oil-immersed or air-break contactors, meters, relays, current-limiting fuses, auxiliary switches . . . everything needed to provide high capacity interruption and maximum protection for man, motor and machine is engineered into one cabinet.



MERCURY ARC RECTIFIERS

Allis-Chalmers can supply power conversion equipment in ratings to fit practically any requirement. Units are engineered to meet the specific job. Everything needed to obtain continuous, economical power conversion — switching, transforming and rectifying equipment — is included in a factory-assembled unit.



ALLIS-CHALMERS

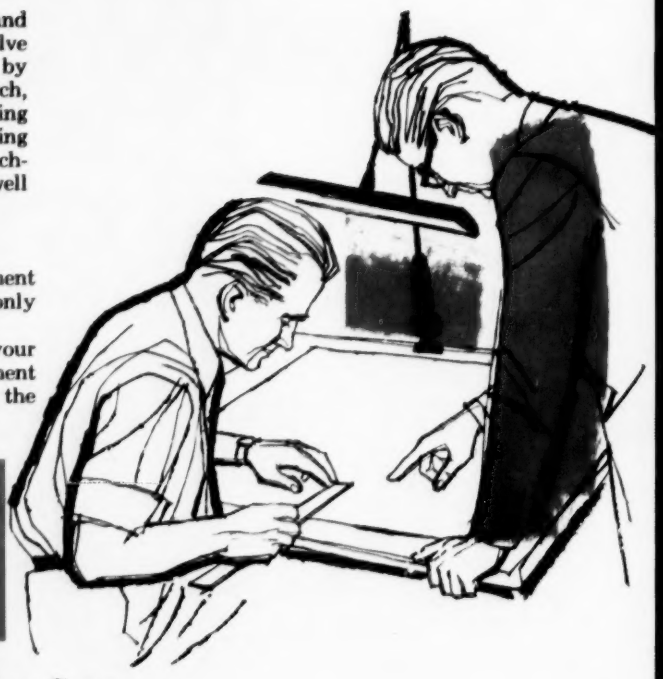
COOPERATIVE ENGINEERING

Your A-C representative is an application specialist — ready and able to work with your staff or your consulting engineers to solve your processing problems. His recommendations are backed by Allis-Chalmers engineering departments . . . by complete research, testing and pilot plant facilities . . . by experience gained in solving thousands of equipment coordination problems. Each processing problem is given personal, expert attention. Engineers and technicians examine and evaluate your process to make *existing* as well as *new* equipment as productive and economical as possible.

UNBIASED RECOMMENDATIONS

Because A-C builds many types and sizes in a given equipment line, recommendations are completely unbiased . . . dictated only by your specific needs.

Most important is the fact that Allis-Chalmers interest in your problem is continuous. Laboratory services, periodic equipment check-up, emergency parts service are yours for the life of the equipment.



ALLIS-CHALMERS

builds the following types of integrated equipment:

HEAVY	1	Crushers • Grinding Mills • Screens
LIGHT	2	Compacting Mills • Roller Mills • Screens
PYRO-PROCESSING	3	Furnaces • Kilns • Coolers • Dryers
POWER	4	Generators • Condensers • Pumps • Transformers • Switchgear • Motors Substations • V-Belt Drives • Control • Rectifiers • Water Conditioning
LIQUID HANDLING	5	A complete line of Centrifugal Pumps
AIR AND GAS HANDLING	6	Axial Compressors • Centrifugal Blowers • Rotary Compressors • Vacuum Pumps

Allis-Chalmers also makes equipment for solvent extraction, electronic heating, metal detection, and inter-floor conveying.

A 4793

Allis-Chalmers
1150 S. 70th Street
Milwaukee 1, Wisconsin

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☐ 25C6177, "A-C Equipment for the Process Industries."

☐ I would also like bulletins on ..... type of equipment

(Explanation of process or problem)

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Name.....

Title..... Company.....

Address.....

City..... Zone..... State.....

WRITE FOR LITERATURE

A 28-page insert, "Allis-Chalmers Equipment for the Process Industries," may be found in the Chemical Engineering Catalog. This insert is available in bulletin form (25C6177). Individual bulletins covering specific equipment lines also are yours for the asking.

target

Dielectrics for Hot Spots

BERBERICH: For packaged power, better wrapping.

Electrical equipment makers have good reason to believe that good things come in small packages; the smaller the better. Scaling down a motor or transformer—without sacrificing output—means savings in space, weight and materials costs.

But such reductions mean increased heat production, pose the need for dielectrics to function at elevated operating temperatures. Equipment designers are now looking for thin dielectric sheets (0.001 in., or less) that can withstand temperatures of 180 C, and higher.

Demand for such materials is expected to reach $4 million by 1960, and continue to climb thereafter. This potential reward has spurred the development of several recently introduced commercial insulating products. But electrical men agree that the need still exists for a low-cost (50¢-$1/lb.), strong (10 lbs./in. width), porous sheet that combines cellulose paper's dielectric properties with superior heat resistance.

Cellulose paper is ideal for operating up to 105 C, but decomposed at higher temperatures. "Consequently," points out insulation specialist Leo Berberich, manager of Westinghouse's liaison engineering department* (Pittsburgh, Pa.), "it's almost imperative that better insulation be inorganic."

* Berberich also heads Westinghouse's committee for coordination of insulation information, and the American Institute of Electrical Engineers' committee on dielectrics.

And it must be porous enough to be saturated with varnish. The material should have, roughly, twice the dielectric strength of air (100 volts/mil); after saturation, it should be four or five times as good.

While it's true that cellulose itself can be modified to boost heat resistance (e.g., by acetylation or esterification), such changes alter the fiber structure and reduce the paper's electrical barrier action. Chemical treatments also leave ionizable impurities that cause dielectric loss over a period of time.

Major research in inorganic insulating papers dates back to 1913. Since then, naturally occurring materials (mica, asbestos, bentonite) and fibers made from glass, ceramics and silica have all come under investigation, still aren't practical at one mil (0.001 in.), or less, thickness.

Note of encouragement: Bureau of Standards has developed a new glass insulating paper that is said to be eight times as strong as early specimens (*CW, March 31, '51, p. 20*).

Despite their deficiencies, glass and asbestos are bringing electrical equipment designers a lot closer to their goals. A number of thin insulators of both materials have recently become available. These products are helping to conserve copper and scarce materials, cut costs by permitting redesign for operation under higher temperatures. But most important, they are reducing insulation failures, major cause of electrical apparatus breakdown.

Among these newcomers are Johns-Manville's Quinterra (pure asbestos) and Quinorgo (bonded asbestos), available in rated thicknesses of 3-15 mils and 5-15 mils, respectively. The former reportedly retains its dielectric and mechanical strength up to 400 C. Because of its organic binder, the latter is less heat resistant.

Johns-Manville also offers laminates of silicone-treated asbestos-glass cloth. Another of the company's laminates, available in 4- to 10-mil thicknesses, utilizes pure asbestos, Du Pont's Mylar film and a high-temperature adhesive. Asbestos is also the basis of General Electric's Terratex impregnated insulation, channeled largely into captive uses.

American Machine & Foundry's Fiberfilm, introduced earlier this year, combines glass microfibers and polytetrafluoroethylene in both porous (0.6-13 mils) and nonporous (0.8-1.7 mil) films. They are claimed to perform satisfactorily at 200-250 C, cost 42¢-1.93/sq. ft. (or about $40-250/lb.). AMF is also exploring uses for silicone-treated glass insulation.

All of the above represent steps in the right direction. The road remaining to be traveled by enterprising researchers—report electrical manufacturers, all of whom are interested in furthering dielectric investigations—is broad, and potentially well worth the effort.

AMF'S SMITH: For top priority, do it yourself.

Pooled for the Plunge

Chemical firms queued up for a turn at government and institutional radiation-research facilities might well watch the progress of a novel cooperative venture launched last week.

Originated by American Machine & Foundry, the plan offers what may be the most practical way yet to speed private atom research.

AMF's idea, already subscribed to by seven other companies (and almost sure to include at least two more in the near future), is embodied in a jointly owned swimming-pool-type reactor scheduled for completion by fall of next year. Called the Industrial Reactor Laboratories, the reactor and auxiliary research facilities will be located on a 250-acre tract within a 50-mile radius of New York City.

Options have been taken on two sites (one in New Jersey, the other in New York), although final selection of the location is subject to clearance by the Atomic Energy Commission (which will also supply the reactor's fissionable fuel on a lease basis).

Operation of the research center will be directed by a leading university (undisclosed at this writing), according to policy formulated by a board of directors representing the participating companies.

These now include AMF Atomics, Inc., (the reactor-building subsidiary of AMF), American Tobacco, Continental Can, Corning Glass Works, International Nickel, Chas. Pfizer, Socony Mobil Oil, and U. S. Rubber. Each of these will hold an equal stock interest in a corporation that will own the laboratories.

General Walter Bedell Smith, chairman of the board and president of AMF Atomics, sees the new facility as a big step toward freeing industrial radiation research now retarded by priority government projects.

To member firms, the new labs are also a comparatively inexpensive way to get into nuclear studies. Total cost of the project is estimated at $1.5-2 million.

Some participants, like Socony Mobil Oil, won't be betting their nuclear-research stakes entirely on the high-neutron flux densities afforded by the reactor. Besides joining in the multicompany program, Socony plans to establish a nuclear research center wholly owned and operated by its research laboratories. The facility will include a Van de Graaff accelerator (to provide high-energy electrons, protons, X rays and neutrons), a laboratory equipped to handle fission-waste radioisotopes and secondary radioactive sources (e.g., antimony-124, cobalt-60, and iron-59), and a counting laboratory for assaying radioactive materials, and general research laboratories, offices, health facilities, etc. Expected date of completion: fall of 1956.

Similarly, IRL won't be putting all its eggs in one basket. Latest word from AMF is that a particle accelerator will be installed as an adjunct to the reactor. The accelerator will provide high-speed electrons to complement the radiation (e.g., neutrons, gamma rays, etc.) available from the reactor.

But, AMF points out that, because of its greater versatility, the reactor will be the hub of IRL research.

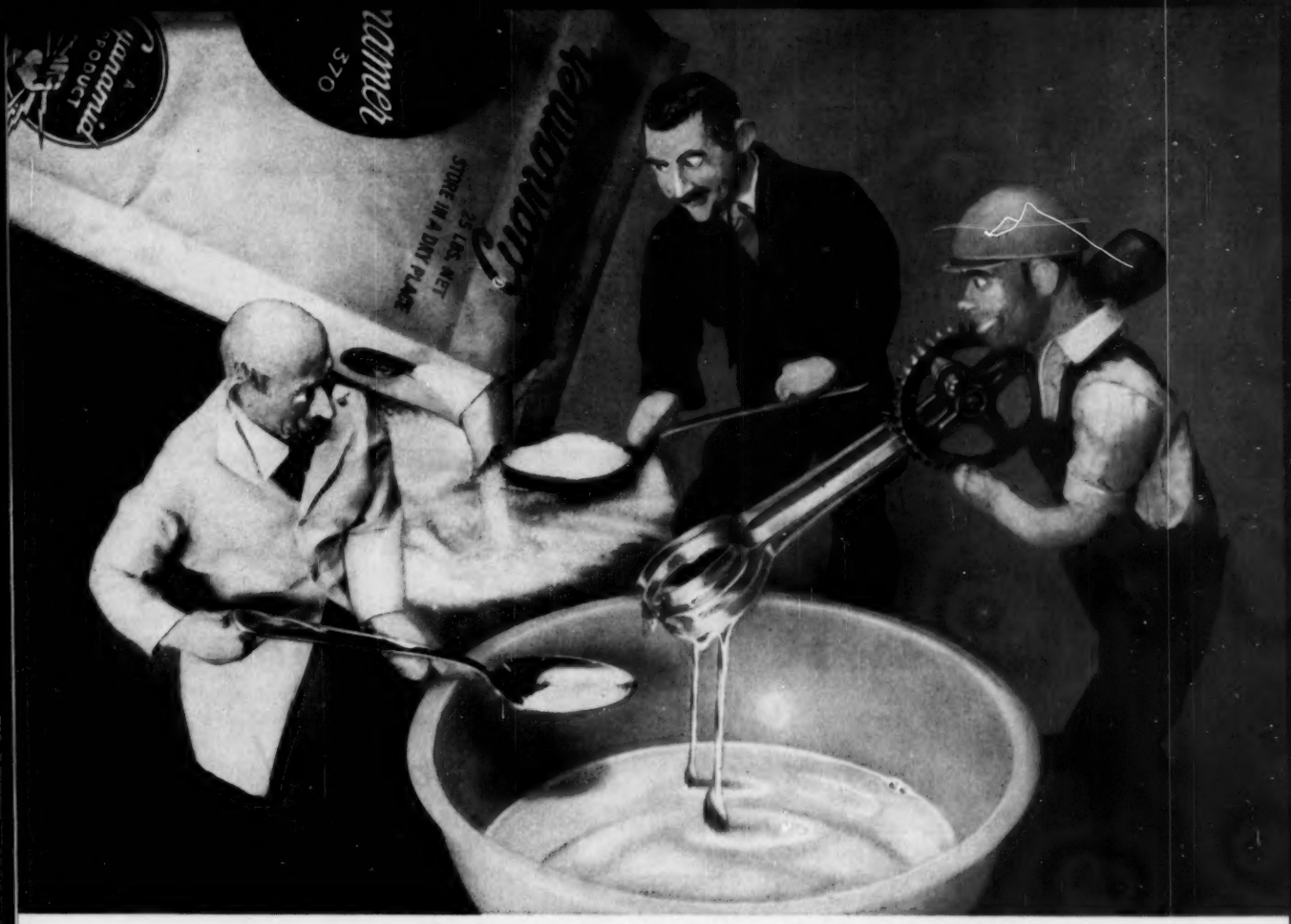
Many details of the joint arrangement are still conjectural. But, if anything may be said with reasonable certainty, it's that the new radiation venture will have limited membership. AMF—which organized the plan—scouted each firm on its radiation needs (flux levels, lab space, etc.), has assured participants of a fair and ample share in the available facilities.

Metals: New Fibers

A budding metallurgical technique, developed at Armour Research Foundation (Illinois Institute of Technology), may mean better plastic supports and catalysts.

Currently under study by ARF's Arthur Metcalfe and Cord Sump, the technique utilizes short (0.0001-in.) metal fibers made from stainless steel, bronze, aluminum, nickel, molybdenum, etc., to fashion objects, much in the same way as powder metallurgy does with metal powders.

ARF reports it has six sponsors in various fields looking at a gamut of applications. Examples: filters (up to 98% porosity, little back-pressure) that can stand higher temperatures than those made of textiles; aeronautical skeletons (to support plastics).



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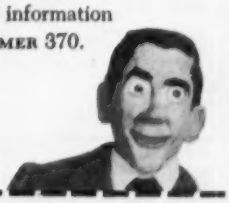

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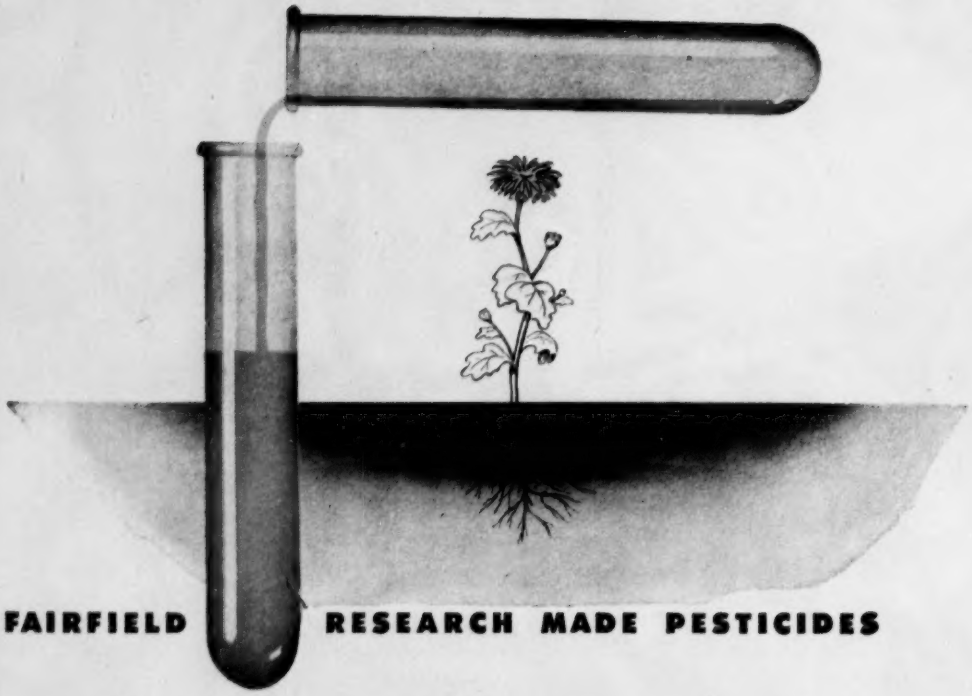

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Immediately following this major advance, Fairfield initiated the first fully-integrated production of one of the constituents of synthetic pyrethrum — allethrin. One of the most complicated organic synthesis ever attempted on a commercial scale, the process involves 18 basic steps and 200 pounds of materials to produce a single pound of 90% pure allethrin.

As these two examples indicate, our Fairfield Chemical Division is important in natural and synthetic pesticides. Just as important, the very nature and scope of Fairfield research and production materially broadens the present and potential participation of FMC Chemical Divisions in the field of organic chemicals.

Through acquisition and internal expansion, FMC Chemical Divisions are growing phenomenally. Each operating division functions autonomously; all work together under the policy guidance of a single administrative staff. Singly or together we can serve you promptly and well, if you use any of the chemicals listed below.

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Building Boom

General Electric's new $5-million metals and ceramics research building, dedicated in Schenectady, N.Y., this week, paces the continuing upward spiral of research construction in the chemical process industries.

A major item in GE's plans for a $13-million expansion of facilities at its Knolls research center, the new building contains more than 75,000 sq. ft. of floor space for an integrated program of ceramic and metallurgical investigations.

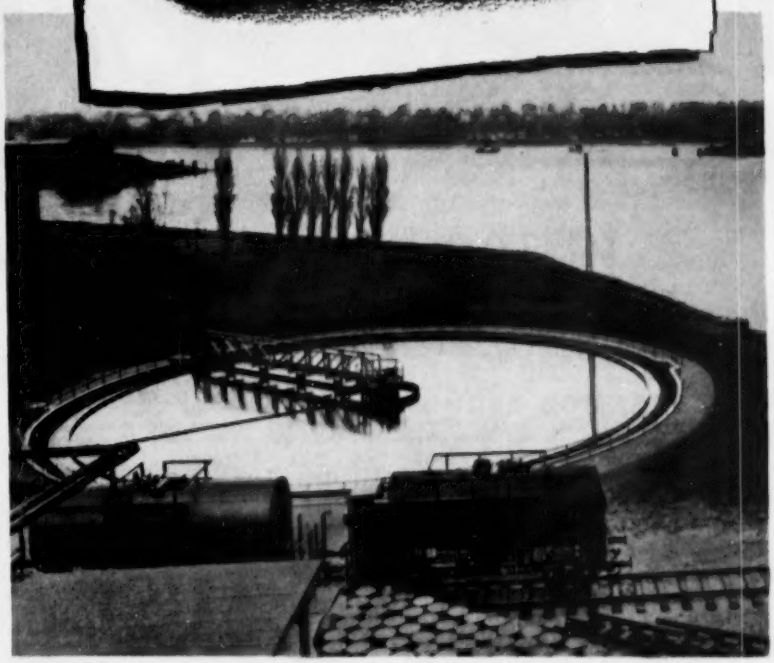
A far cry from typical chemical laboratories, the structure is fitted with giant cranes, big furnaces, and a 1,250-ton extrusion press. Cost of construction is reported to be $33.70/sq.ft. The building now houses 210 staffers, although it can comfortably accommodate more.

Other names, too, are making expansion news:

- Koppers broke ground last week at Kobuta, Pa., for a new development laboratory. The building will be two stories, cover 43,000 sq.ft. of space, give the company added facilities for short-range studies geared to sales problems. Scheduled completion: early '56.
- Schering recently cleared a site for a proposed new biological research center at the company's Bloomfield, N.J., headquarters. The structure,

GE METALLURGIST: For research, giant cranes and a 1,250-ton press.

Oil Refinery Waste Treatment in Germany



In Germany too, stream pollution by industrial wastes causes serious problems. A large refinery in Hamburg solved the problem with the installation above. Showing a marked similarity to current practice in the United States, the plant employs a 110′ dia. Dorr Clarifier equipped with a skimming arm as the main treatment unit.

Feed to the unit is 6600 GPM of refining waste, and an effluent is produced containing less than 20 ppm of oil, well under the limits required by the authorities. Equipment was supplied by our Associated Company in Germany, Dorr-Oliver G.m.b.H.

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NM
CH_3NO_2

NE
$CH_3CH_2NO_2$

THE CSC NITROPARAFFINS

New Stars

to give new direction

to the chemical industry

2-NP
$CH_3CHNO_2CH_3$

1-NP
$CH_3CH_2CH_2NO_2$

PHYSICAL PROPERTIES

	NM (Nitromethane) CH_3NO_2	NE (Nitroethane) $CH_3CH_2NO_2$	1-NP (1-Nitropropane) $CH_3CH_2CH_2NO_2$	2-NP (2-Nitropropane) $CH_3CHNO_2CH_3$
Molecular Weight	61.04	75.07	89.09	89.09
Boiling Point at 760mm, °C	101.2	114.0	131.6	120.3
Azeotrope with Water, bp, °C	83.6	87.1	91.2	88.4
NP in azeotrope, % by weight	77.1	73.6	64.5	73.1
Vapor Pressure at 20°C, mm	27.8	15.6	7.5	12.9
Evaporation Rate, by volume*	139.0	121.0	88.0	110.0
Freezing Point, °C	−29.0	−90.0	−108.0	−93.0
Specific Gravity at 20/20°C	1.139	1.052	1.003	0.992
Density of Vapors (air = 1.00)	2.11	2.58	3.06	3.06
Weight per U.S. Gallon at 68°F, lb	9.48	8.75	8.35	8.24
Coefficient of Expansion, per °F	0.00064	0.00062	0.00056	0.00058
Refractive Index, n_D at 20°C	1.3818	1.3916	1.4015	1.3941
Surface Tension at 20°C, dynes/cm	37.0	31.3	30.0	30.0
Heat of Vaporization at 30°C, calc., cal/g	143.3	124.8	107.3	104.4
Heat Capacity at 25°C, cal/g	$0.422^{30°C}$	0.441	0.471	—
Dielectric Constant at 30°C	35.76	28.00	23.22	25.48
Ignition Temperature, °F	785.0	778.0	789.0	802.0
Flash Point, °F (Tag Open Cup)	112.0	106.0	120.0	103.0
pH 0.01M Aqueous Solution at 25°C	6.4	6.0	6.0	6.2
Solubility in Water at 20°C, % by volume	9.5	4.5	1.4	1.7
Solubility of Water in NP at 20°C, % by volume	2.2	0.9	0.5	0.6

*N-Butyl Acetate = 100

NP DERIVATIVES ALSO AVAILABLE

AB (2-Amino-1-butanol)
AEPD (2-Amino-2-ethyl-1, 3-propanediol)
AMPD (2-Amino-2-methyl-1, 3-propanediol)
AMP (2-Amino-2-methyl-1-propanol)
NB (2-Nitro-1-butanol)
NEPD (2-Nitro-2-ethyl-1, 3-propanediol)
NMPD (2-Nitro-2-methyl-1, 3-propanediol)
NMP (2-Nitro-2-methyl-1-propanol)
ALKATERGES
TRIS AMINO (Tris [hydroxymethyl] aminomethane)
TRIS NITRO (Tris [hydroxymethyl] nitromethane)
HAS (Hydroxylammonium Acid Sulfate)
HC (Hydroxylammonium Chloride)
HS (Hydroxylammonium Sulfate)

SAMPLES ON REQUEST

Here are the Nitroparaffins – NM(Nitromethane), NE(Nitroethane), 1-NP(1-Nitropropane) and 2-NP(2-Nitropropane). These four NP's have a potential range of usefulness unequalled by any other group of organic chemicals! CSC's new Nitroparaffin plant at Sterlington, La., will be on stream with increased volume starting August of 1955.

In many cases, they provide better and more economical methods of manufacturing well-known and widely used industrial chemicals. However, the majority of the reactions yield entirely new compounds. There are practically an unlimited number of products which can be prepared from the NP's. As solvents, they present an unusual combination of properties – they are medium-boiling, mild-odored and, most important of all, they have strong solvent power for a wide variety of substances, including many coating materials, waxes, resins, gums, dyes, fats and oils, and numerous organic chemicals. The CSC Nitroparaffins are chemistry's newest stars. They give new direction to the production of old products and the development of new.

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CSC INDUSTRIAL CHEMICALS

when completed, will provide 36,000 sq.ft. of laboratory space for investigations in biochemistry, pharmacology and veterinary medicine.

• Monsanto has opened its recently completed laboratory building at Springfield, Mass. The expansion doubles the plastics division's research facilities, will be utilized for a broad spectrum of studies. Basic investigations as well as process development work are planned.

• Rayonier last week revealed its intention to establish a new research center on 82 acres in Whippany, N.J. Work on the first unit of the project, a 32,000-sq.ft. laboratory, has already begun. According to Rayonier, "these facilities may be augmented as needed in the future." The chemical cellulose firm now carries on research at Shelton, Wash.; operations there reportedly will continue unabated.

• Hoffmann-La Roche is launching work in a new laboratory building recently completed at the company's Nutley, N.J., plant. The structure is three stories, 79 by 158 ft., with provision for expansion to twice the present area. Features: airconditioning and an emergency generating system.

• Esso Research and Engineering Co. (Linden, N.J.) will build a three-story, laboratory-office building to accommodate 600 oil scientists and engineers. Construction is scheduled to start in September, is expected to take about a year for completion.

• Textile Research Institute (Princeton, N.J.) is considering expansion of its laboratory facilities, will also transfer its publications department from New York to Princeton.

• Consulting firm Dallas Laboratories (Dallas, Tex.) will occupy a newly built laboratory this month. A one-story, air-conditioned building, it was designed by the firm's president, Sidney Lee.

•

Focused on Research: High-speed photography for research is a new service of camera-manufacturing Beckman & Whitley (San Carlos, Calif.). The company has just organized a special department to work with customers in this area. Available services include photographic studies of detonation, electrical discharge, shock wave phenomena, dynamic stress systems, etc. Ballistics, flame study and fluid flow are among processes in which the firm will specialize.

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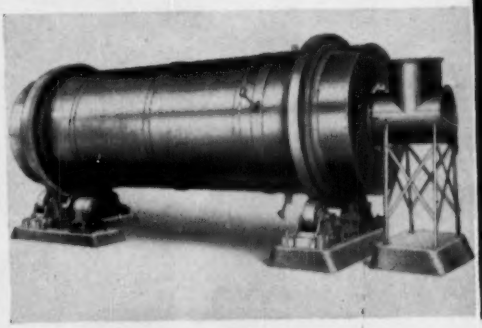

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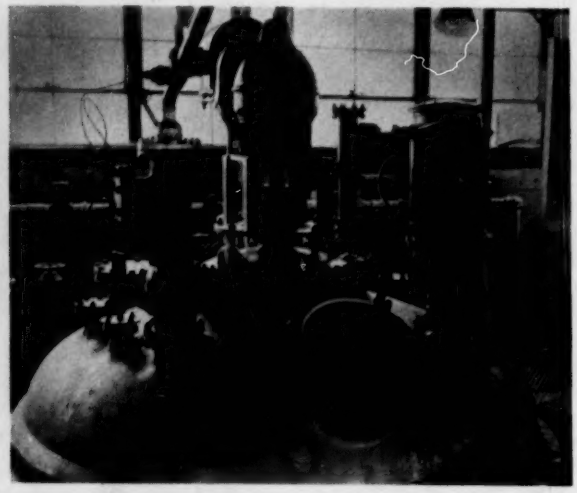

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BEACH, NELSON, MOORE: Threat of synthetics sounds oil processors' call to arms.

Can Vegetable Oils Come Back?

In much the same fashion that medical doctors pack kits before rushing to the aid of stricken patients, "doctors" (mostly top executives) of milling product marketing will toss sales cures into their satchels, head next fortnight for Minneapolis. Their mission: to diagnose the marketing problems plaguing vegetable oil processors and to point up corrective therapy. Two symposia sponsored by the ACS Marketing and Economics Division at the fall meeting of the American Chemical Society:

- "Marketing the Products of Oil Seeds (Sept. 12)."
- "Marketing Problems in the Milling Industry (Sept. 15)."

This may mean that trouble is brewing for manufacturers of synthetic raw materials for protective coatings, that the natural products people are determined to fight back.

Groggy from the impact that chemical synthetics have made on traditional protective coating markets, and troubled by unneeded manufacturing capacity, vegetable oil processors are now hunting answers to their predicament. The Minneapolis meetings won't, of course, solve the problems of the seed crushers. But the discussions should reveal, at least, what the chemical segment of the milling industry is doing and must do to survive. In capsule form, here's what program speakers will prescribe:

Better technical service. When it comes to supplying the coatings industry with technical data, contends Charles Moore, technical director for the Glidden Co., the chemical industry is doing a good job. But the vegetable oil industry is lagging. The culprit: communications.

Part of the blame, however, must fall on the oil seed users' secretiveness, claims Max Kantor, director of technical sales and service for Cargill, Inc. Appealing for close liaison between user and producer, Kantor will review (Sept. 12) the "excellent results" from such cooperation, underscore the broad technical aid and data now available from many oil producers.

New product development. This is a "must" for vegetable oil companies searching for higher sales and profits. And, there's evidence of a trend to such programs in the industry. One firm with a brand-new development department, Archer-Daniels-Midland will tell (Sept. 12) how it has been aided by development, how its department is organized to get cooperation from other departments, make field contacts on new products, find markets, study profit potential of new products, and communicate effectively with other company sections. Speaker: George K. Nelson, A-D-M's development director.

Finding new markets. Although E. Scott Pattison, manager of the Glycerine & Fatty Acid Divisions of the Assn. of American Soap & Glycerine Producers, Inc., will sketch (Sept. 12) mainly the situation for fatty acids, vegetable oil businessmen will find many problems in common. Challenges posed by the notoriety fatty acids and their derivatives have gained for unstable prices and a many-customer-but-small-individual-sale market, thinks Scott, call for:

- Expansion of markets to each individual customer through development of tailored products. Both industry-wide cooperative programs and individual company efforts are needed.
- Educational efforts to convince acid users that future price stability is coming. Reason: many fatty acids are now available from more than one source.

Different are the problems facing nurturers of amino acid sales fields. Here, avers Du Pont's George R. Beach, Jr., manager of lysine sales development, problems are no longer technical but rather a matter of:

- Convincing consumers that lysine fortification is worth—nutritionwise—

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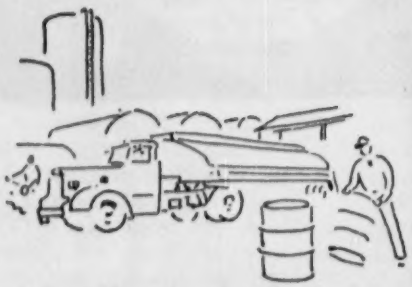

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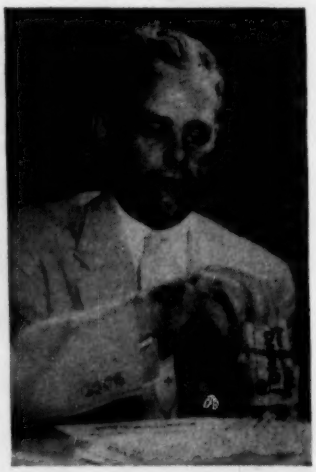
- Maintaining "orderly" market development while only pilot-plant quantities are available.

What's the answer? A special feel-your-way-along sales program is Du Pont's approach (Sept. 15).

Besides discussions on marketing

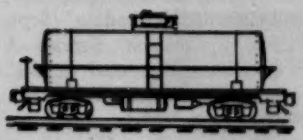


Sponging Up Sales

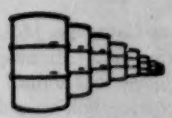
ADVERTISING that's never out of sight can sometimes prove mighty effective. One recent case at hand: Davison Chemical Co.'s direct-mail campaign to woo more farmers to its brand of granulated fertilizer. Davison (a division of W. R. Grace & Co.) sent out cellulose sponges compressed to the size of a calling card, which carried an indelible sales message. Above, George Klein, general sales manager of the Mixed Fertilizer Division, tries one out. The sponge idea received a remarkable 21% response (inquiries).

The company tried three other direct-mail gimmicks, too: candy corn for corn belt farmers, rubber dollars, and an ample package of granulated fertilizer. But it was the sponge that really clicked.

FAST DELIVERY



IN TANK-CAR AND



DRUM* QUANTITIES

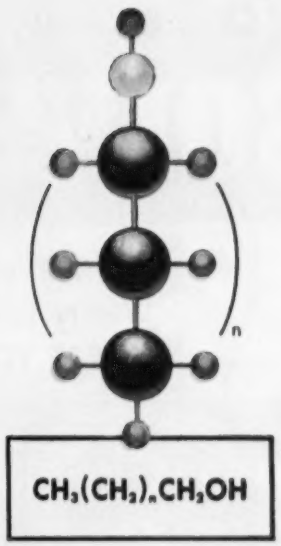
Du Pont LOROL®
Fatty Alcohols

Quick delivery can be made on "Lorol" fatty alcohols in tank cars and containers of various capacities and types. Your Polychemicals representative will be glad to discuss your specific requirements with you.

*Other types of containers used where appropriate

Specify DU PONT LOROL®

Fatty Alcohols



CAN BE ESTERIFIED with acids in the presence of a catalyst.

CAN BE OXIDIZED to give the corresponding aldehydes. Further oxidation yields the acids.

CAN BE DEHYDRATED over an aluminum oxide catalyst to yield corresponding olefins.

ARE NON-CORROSIVE.

PRINCIPAL USES

These versatile straight-chain alcohols have wide application as chemical intermediates in the preparation of certain pharmaceutical, synthetic detergent and cosmetic products. "Lorol" fatty alcohols are also used as intermediates in the preparation of: lubricating oil additives; textile finishing, softening and anti-foam agents; polymerization modifiers used in synthetic rubber manufacture; and plasticizers for plastics. They also find application in the leather and paper industries and have excellent possibilities for uses in other industries.

GENERAL ADVANTAGES

Du Pont "Lorol" fatty alcohols are closely controlled with respect to hydroxyl, iodine, acid and ester numbers and feature a high degree of uniformity.

AVAILABLE FOR IMMEDIATE SHIPMENT ARE:

"LOROL" 5 AND 7—mixtures made up principally of lauryl and myristyl alcohols.
"LOROL" 24—normal cetyl alcohol.
"LOROL" 28—normal stearyl alcohol. (In U. S. P. and Industrial Grades.)

To obtain full information on Du Pont "Lorol" fatty alcohols, just mail the coupon below, or write us on your letterhead today.

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- ☐ Crystal Urea
- ☐ Diglycolic Acid
- ☐ Hydroxyacetic Acid
- ☐ HYTROL® O Cyclohexanone
- ☐ HEXALIN® Cyclohexanol
- ☐ Methanol

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Dept. 608, Wilmington 98, Del.

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Firm_____

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ills of the millers, other topics will be explored. These include "Marketing of Vegetable Oil Seed Protein" (Sept. 12); "Technical Representation in the Shortening Industry" (Sept 12); "Oil Seed Commodity Trading" (Sept. 12); "Flour Treatment Service—A Way of Marketing Chemical Agents" (Sept. 15); and the "Commercial Development of Guar" (Sept. 15).

How millers and oil seed processers will fare in their attempt to hold off synthetic chemical competition remains to be seen. But it seems reasonable that what's tonic for the miller's may prove toxic competition for some chemicals manufacturers.

•

Expanding Sales Coverage: McLaughlin Gormley King Co. (Minneapolis), pyrethrum allethrin, and aerosol insecticide manufacturers, will open a New York branch office. The branch will supervise the Middle Atlantic and New England areas.

• Columbian Carbon Co. is transferring the sales organization of Binney & Smith Inc. to Columbian Carbon. Binney & Smith Inc. has been handling distribution of Columbian's pigments, dispersions, and some industrial raw materials.

John A. Chew Terminals, Inc., has a new bulk storage set up. Specially designed for drumming, packaging and storing chemicals, solvents, and oils, it's located in Jersey City.

• Bulldozers are now snorting at Franklin Park, Ill., to break ground for E. R. Squibb & Sons' new 52,000-sq.-ft., one-story warehouse.

• Chemical Division, Goodyear Tire & Rubber Co., Inc., is reorganizing, setting up three new sales departments: rubber and rubber chemicals, plastics, and coatings.

• New York Quinine & Chemical Works, Inc. (New York City) has designated H. R. Laist Co. (San Francisco) to distribute its fine chemicals.

• A. Gross & Co. (New York) has picked Carl A. Lechner Co. (Chicago) to handle Gross' fatty acids and glycerides.

• U. S. Industrial Chemicals Co., division of National Distillers Products Corp., has appointed DeMert & Dougherty, Inc. (Chicago) exclusive distributor for PiB, liquid insulation.

• McKesson & Robbins (New York) is installing an office in Atlanta, Ga., to distribute heavy and fine chemicals in the Southeast.

FAMOUS LIGHTHOUSES OF AMERICA

STANNARD ROCK LIGHTHOUSE, Lake Superior, Michigan, is located about 23 miles southeast of Manitou Island. Completed in 1883, the stone tower is built on a base of concrete and stone which stands on solid rock in 11 feet of water. The light, 102 feet above water and visible for 18 miles, protects shipping in a dangerous area on the heavily traveled trade route between Duluth and the lower lakes.

Protection for the quality of your products and the efficiency of your processes is provided by the uniformly high standards of Niagara Alkali Company products. Depend on the purity and uniformity of Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Paradichlorobenzene, Nialk Caustic Soda, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

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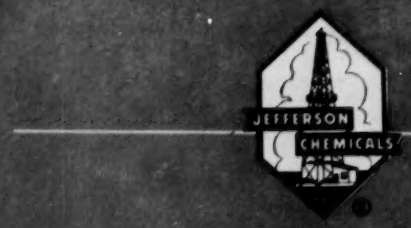


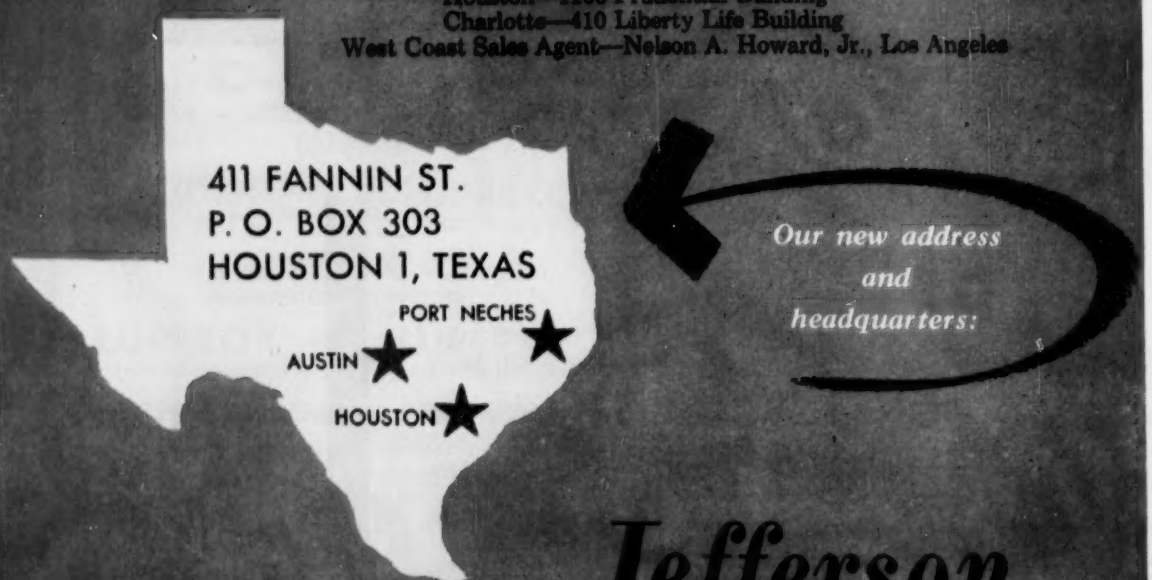
JEFFERSON CHEMICAL COMPANY, INC.

announces the transfer of its executive offices and marketing headquarters from New York to Houston, Texas

This move is being made to bring our administrative headquarters into closer integration with our plant at Port Neches and our laboratories at Austin. Through closer teamwork between operations and administration, we expect to bring you even better service on quality petrochemicals.

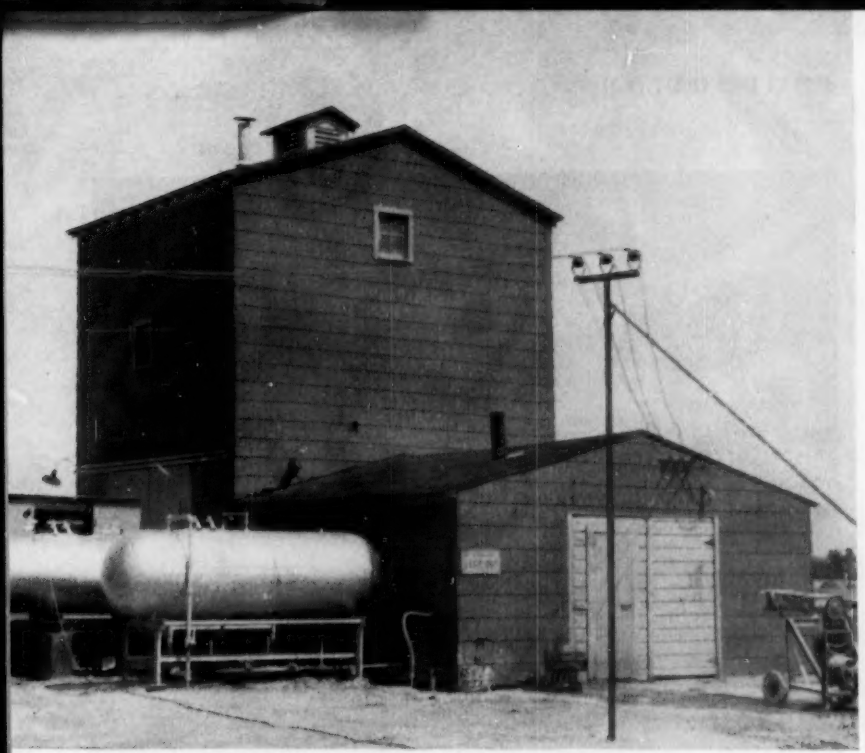
In addition to our branch office at 260 Madison Avenue, New York, district sales offices are:

Chicago—221 North LaSalle Street
Houston—1106 Prudential Building
Charlotte—410 Liberty Life Building
West Coast Sales Agent—Nelson A. Howard, Jr., Los Angeles



Jefferson
CHEMICAL COMPANY, INC.

153



IFS PLANT pilots cost short cut to high-phosphorus fertilizer as . . .

Metaphosphate Scores

TVA this week has an ally. For years, it's been the only vocal supporter of calcium metaphosphate as a fertilizer. But James Seymour, a research chemist with the Illinois Farm Supply Co. (Collinsville, Ill.), has just developed a process to incorporate metaphosphate into a mixed fertilizer in a standard plant—without the addition of any unusual equipment. If the process lives up to Seymour's expectations on costs, it might well entice some commercial metaphosphate production.

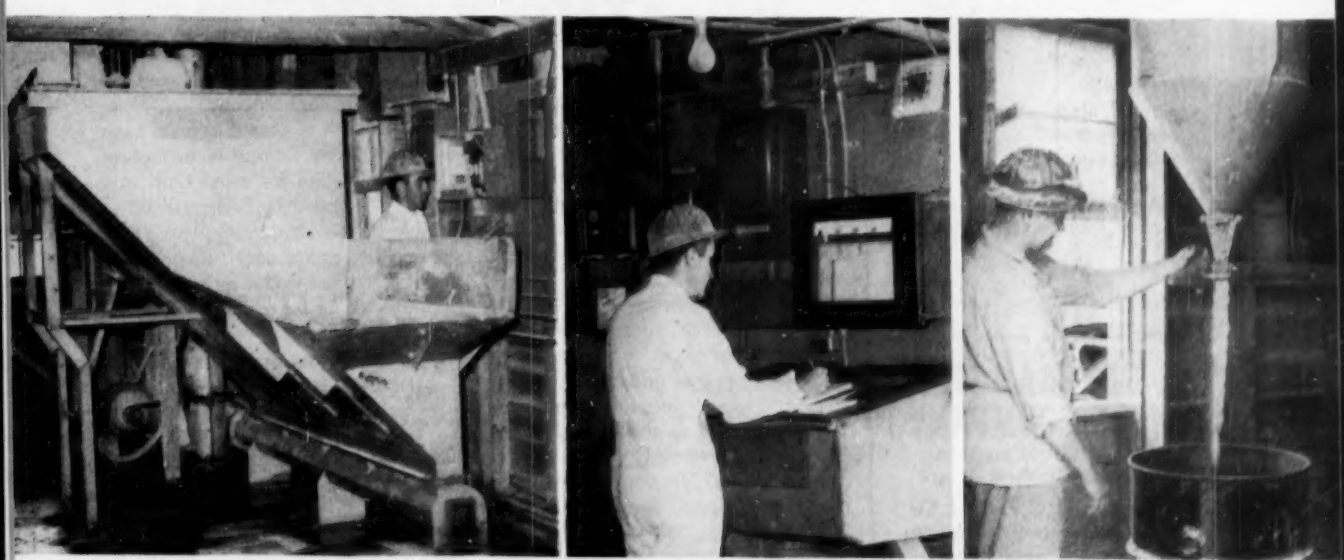
TVA's interest in calcium metaphosphate dates back to 1935. And its fondness for the product is easily understood: it runs high (60-65%) in phosphorus; is, in fact, the most concentrated form available (outside of elemental phosphorus). What's more, it's nonhazardous and therefore enjoys a considerably lower freight rate than does the elemental material.

As a phosphatic fertilizer, it's hard to beat, from many standpoints. One drawback to its use, however: there's been no way of incorporating it chemically* into an enriched or mixed fertilizer. Seymour, however, took a well-known laboratory-scale hydrolysis, probed, piloted and polished it to the point where he's convinced that it can be moved right into a commercial fertilizer plant.

Push for Two: Actually, Seymour prefers to look on the hydrolysis as a series of processes rather than a single one. By suitable adjustment, he says, it's possible to employ the technique to turn out any common ratio of phosphorus-to-potassium-to-nitrogen. Two processes, however, are expected to be most widely applicable. One makes an enriched superphosphate; the other, a mixed fertilizer.

In the process to make the enriched super, rock phosphate dust, sulfuric acid, calcium metaphosphate and water are mixed in a conventional acidulator. This is what happens: sulfuric acid not only acidulates the rock, but also promotes the hydrolysis of

* Much of the material being made by TVA is used for dry blend manufacture or for direct application to the soil.



PUSH-BUTTON PROCESS: From hopper-fed raw material (left), a ready-to-bag mixture in 10 minutes without curing.

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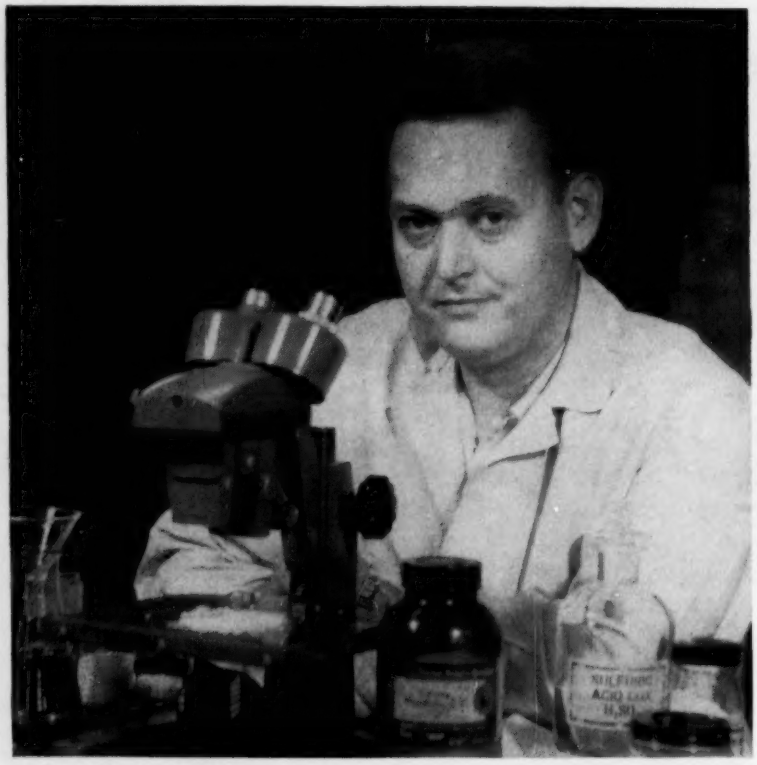


SEYMOUR: His hydrolysis process means savings to consumers.

the metaphosphate to monocalcium phosphate. One mole of the latter, in turn, reacts with one mole of the sulfuric to produce two moles of phosphoric acid and a mole of calcium sulfate. The rest of the process is straightforward, except that, Seymour claims, "denning" can be sidestepped by means of a recently discovered (but undisclosed) technique.

He says that, in the lab, grades as high as 50% phosphorus have been made but that in the larger equipment he's concentrated on grades closer to 35%. He adds the product is semi-granular, low in moisture and permeability and "reflects a savings of about 14¢/unit of P_2O_5."

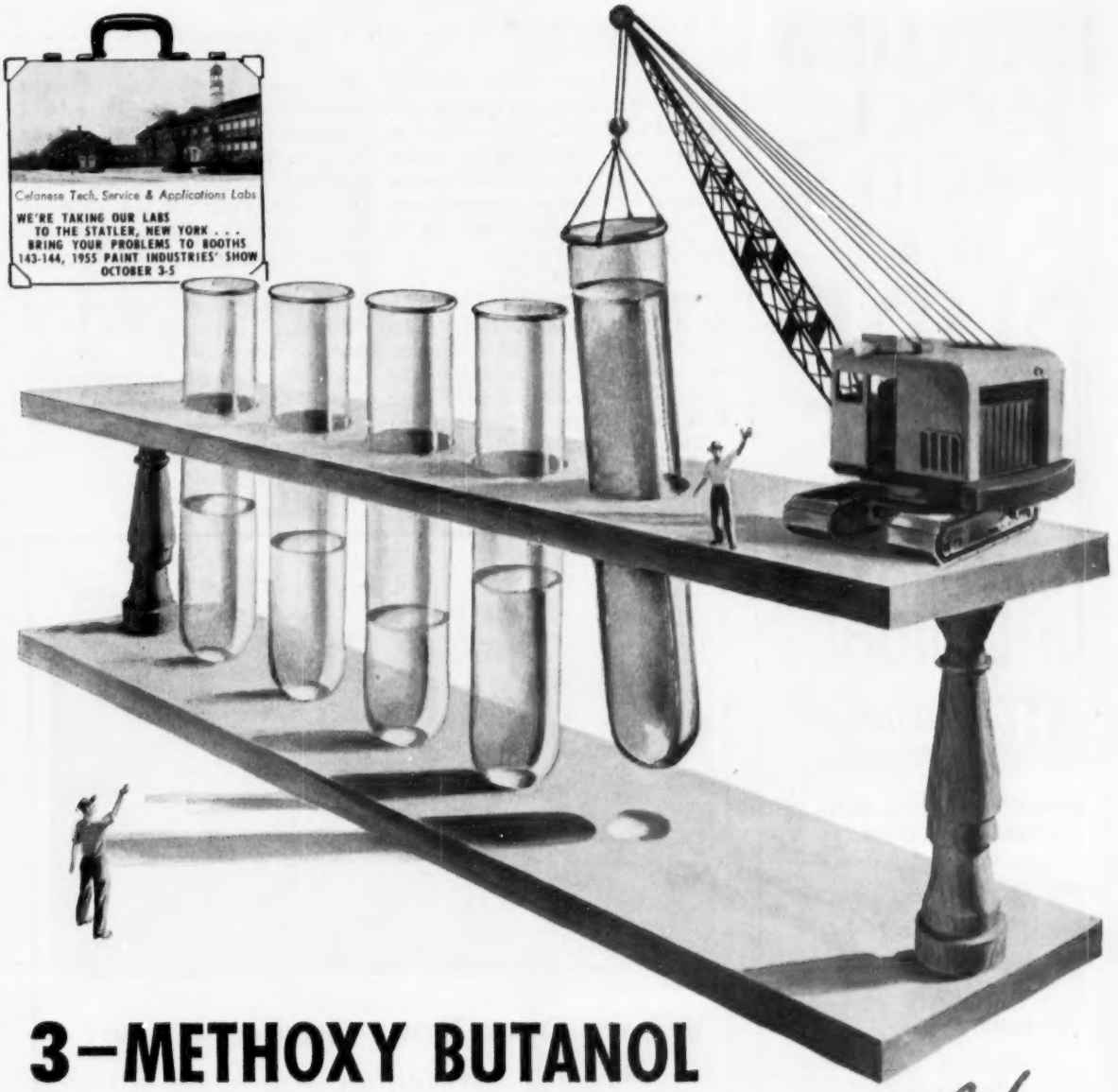
The Mixed Reaction: The method of turning out a mixed fertilizer is essentially the same, except that no phosphate rock is added in the first step. And the product from the acidulator-hydrolyzer is transferred to an ammoniator (where potassium can also be added). In that way, a wide range of complete fertilizers can be produced (e.g., 14-14-14, 6-24-24, 10-20-20) at savings, Seymour claims, as high as 9¢/unit.

One thing that Seymour will find tending to hold back his process is the lack of commercial producers of the metaphosphate. He reports, however, that several firms have production projects under study. The Central Farmers Fertilizer Co. (of which his Illinois Farm Supply is a member), for one, is considering the production of elemental phosphorus and converting it into metaphosphate.

It's only fair to note that firms have shown an active interest in metaphosphate production for some time, and as yet not one has been willing to gamble on a commercial plant. That doesn't deter Seymour, though; he feels his process would make a highly desirable tenant for commercial equipment, one that doesn't require decorating before moving in.

EQUIPMENT . . . .

Evaporative Cooler: Niagara Blower Co. (New York City) is introducing its panel casing Aero heat exchanger, which, it says, can control temperatures to within 2 degrees F. Fluids to be cooled flow through two par-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†1, 3 – Butylene Glycol, for instance . . . or Methyl Isopropenyl Ketone.

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allel-mounted coil sections, both of which are continuously sprayed with recirculated water. Dampered air intakes control evaporation by regulating air flow through the system. Tailored for a host of process industry jobs, units are available in 7- to 18-million-Btu./hour capacities.

•

Large-Volume Extractor: Latest addition to Podbielniak, Inc.'s (Chicago) line of centrifugal countercurrent solvent extractors is the 500-gal./minute Chemizon. Only slightly larger than an office desk, the Chemizon utilizes high centrifugal force (to 2,000 times gravity), achieves results comparable to those provided by a 10-ft.-diameter, 100-ft.-high gravity column. Added advantages to chemical and petroleum processors: fast throughput limits material holdup to less than 250 gal., minimizes time required to reach equilibrium.

•

Plastic Tanks: Copolymer Corp. (Los Angeles) has just brought out its Polybilt glass-reinforced polyester tanks. Constructed of easy-to-assemble molded sections, the tanks can be disassembled and nested for convenience in handling and shipping. Units are

Where Does Your Garden Grow?

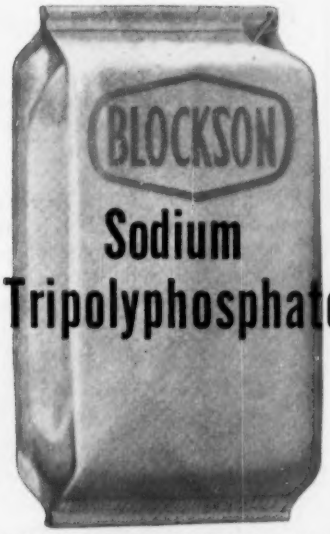
ORE STOCKPILES aren't likely candidates for garden club awards. But many may soon be sporting mantles of flowering vegetation if other companies adopt the erosion-curbing system used by Mutual Chemical Division of Allied Chemical & Dye Corp.

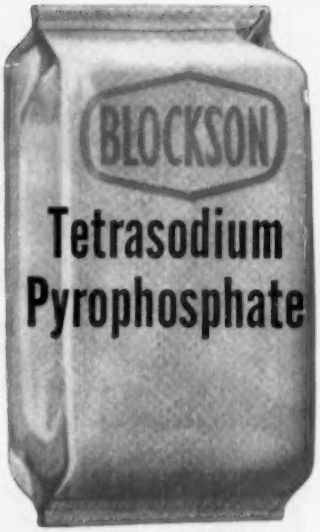
Mutual stumbled on the solution of its ore storage problems when a load of chrome ore from the Transvaal section of South Africa turned up containing seeds of corn and castor beans. Following its customary procedure, Mutual dumped the ore in piles, kept the surface moist by sprinkling to prevent wind erosion.

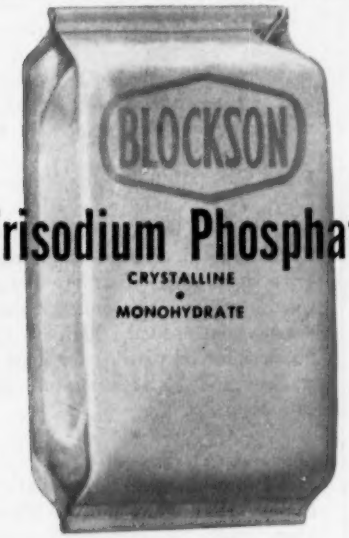
At first, the plants that sprouted from the seeds received little attention. But it was soon apparent that overgrown piles no longer washed away, as did uncovered piles, during heavy rains. Nor did they require constant sprinkling during dry weather.

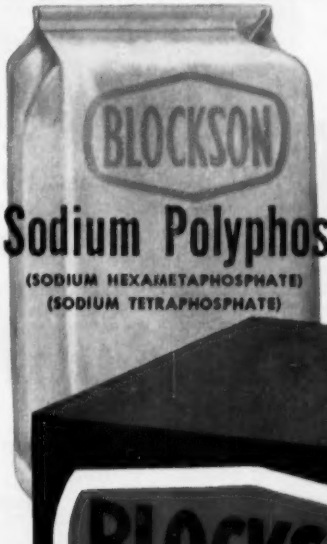
Mutual then investigated various lawn and cereal grasses and other types of plantings. Any vegetation, it was found, is effective during the growing season. But morning glory, which is hardy, spreads rapidly, requires a minimum of water, seems to be particularly well-suited to the job.

The combination of planting and watering until growth is established has reduced Mutual's ore losses to practically nil. And sheet iron separators are no longer needed to retain washed-out piles.

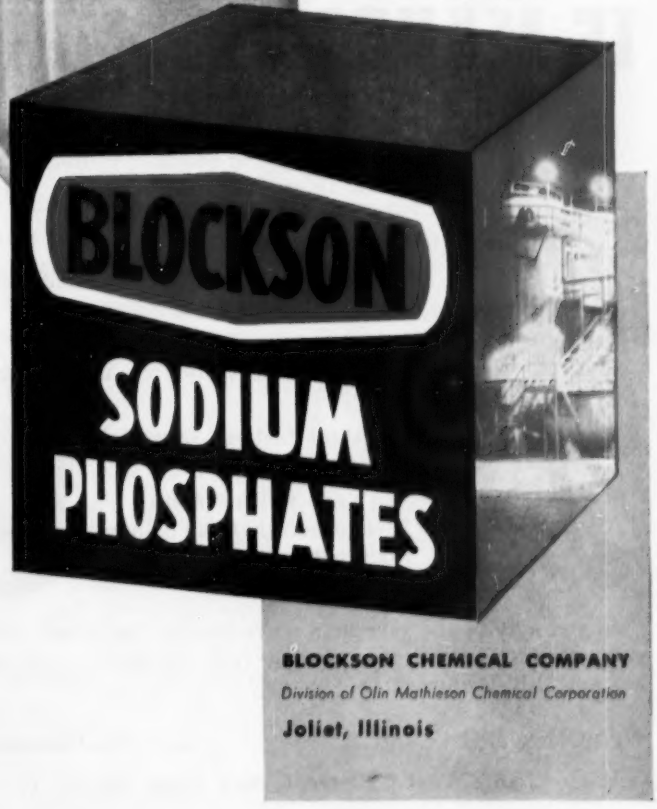








Sodium Polyphos is Blockson's brand name for a water soluble Glassy Sodium Phosphate with the desirable characteristics of Sodium Hexametaphosphate and Sodium Tetraphosphate.



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PRODUCTION . . . . .

supplied with epoxy-type or phenol-furfural coatings where additional protection against strong alkalis or oxidizing acids is required.

•

Piping Aid: H&M Pipe Beveling Machine Co. (Tulsa, Okla.) is out with a new combination pipe dolly that, it claims, can reduce pipe handling time by as much as 85%. The unit handles pipe in all sizes to 36 in., provides a high safety factor for leveling, aligning, fitting, and welding work.

•

Explosionproof Motor: Chief boast of Marathon Electric Mfg. Corp.'s (Wausau, Wis.) new chemical motors is the self-cleaning effect of the air stream above the motor that reduces maintenance to a minimum. Rugged cast iron frames have axial ducts through cored ribs to step up heat transfer, provide 150% more heat dissipating area than standard frames.

•

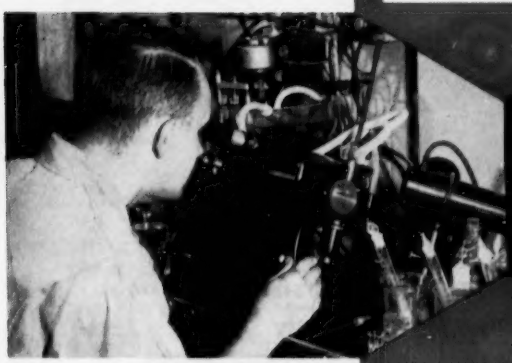
Fume Fans: Heil Process Equipment Corp. (Cleveland) now offers solid plastic fans for handling corrosive fume removal. Rigivin (high-impact-type rigid vinyl) fans are designed for use where maximum corrosion resistance is needed; Rigidon (glass fiber-reinforced plastic) for most acid services and high-temperature applications to 200 F.

•

Sluice Gate: The first basic sluice gate improvement in years—that's how Rodney Hunt Machine Co. (Orange, Mass.) sums up its newly developed Hy-Q flush-bottom closure device. Eliminating the raised barrier or deep pocket used for seating conventional gates, the Hy-Q gate employs a flexible neoprene seal that compresses on a flush-bottom stop bar. Flush closure prevents accumulation of silt and trash, permits more compact design of industrial water-control facilities.

•

Slurry Disintegrator: Rietz Mfg. Co. (Santa Rosa, Calif.) has engineered a new, low-cost RP series of angle disintegrators for mixing, blending, and dispersing slurries. Disintegrator heads with 4-, 6-, or 8-in.-diameter stainless steel rotors operate on 2-25 hp. motors, can be easily disassembled for thorough cleaning. It's claimed the units can handle almost any desired capacity when used for pressure-in, pressure-out operation.



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xylene

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(coarse)

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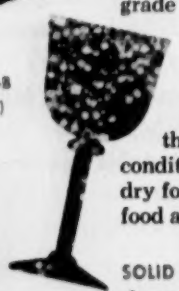

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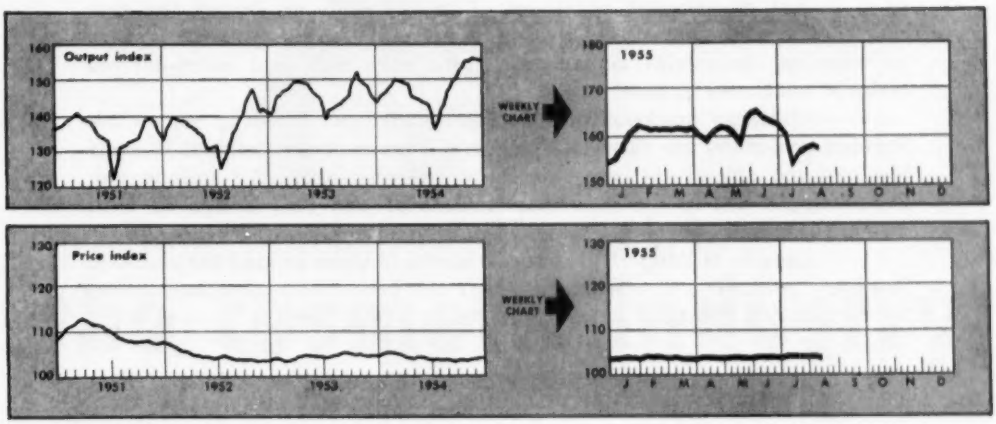
MARKETS . . . . . .



WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	159.3	158.0	142.6
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.1	104.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	446.2	442.6	318.7

MONTHLY INDICATORS—Trade (Million Dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	$27,152	$26,651	$23,349	$43,790	$43,549	$44,185
Chemicals and allied products	2,013	1,961	1,637	3,012	2,995	2,934
Petroleum and coal products	2,384	2,346	2,171	2,705	2,670	2,795

MARKET LETTER

How to blot up some of the anticipated nitrogen surplus in this country is still a prime problem for producers. But this week you can add Shell Chemical to the list of ammonia makers (*CW, July 9, p. 72*) turning to production of diammonium phosphate as one solution.

Shell is reportedly now producing pilot batches of DAP, using ammonium sulfate facilities, at its Shell Point, Calif., plant. If the economics of an ammonia-phosphoric acid process prove promising, it's more than likely the firm will jump into commercial DAP production—and as soon as possible.

Significantly, California alone, will be overproducing nitrogen, by the end of next year, at an estimated 170,000-tons/year rate.

•

The selenium industry, on the other hand, is being buffeted by all the rammers of a tight market. Makers of selenium-containing pigments, for example, plagued by the long-time scarcity, and just hit by a $3/lb. increase in price of the metal, are this week passing on the blow to cadmium sulfoselenide color customers.

Prices of red cadmium lithopones (including orange light, medium light red, and dark maroon) are in for advances ranging from 3¢/lb. to as much as 47¢/lb. depending on shade.

Pigment producers haven't been able to get their full requirements of selenium for some time, and as long as the government continues siphoning supplies, the trade will have to hobble.

But government purchases of toluol, while up during the past couple of months, haven't been large enough to apply any sort of pinch on supplies. Industrial demand for both coke-oven and petro-derived material continues at good levels.

Overseas markets for domestic toluol have dried up somewhat. Foreign customers are fairly well-stocked. This is clearly evident in some just-released official statistics on U. S. exports: about 3.8 million gal. were shipped out in the first four months of this year compared with nearly 10 million during the same period a year ago.

Despite buildup of inventories here and there around the country, however, producers, by and large, aren't too pessimistic. One indication: few hint at any imminent price-softening.

•

The same can't be said for benzol. The continuing flood of low-cost European material is building pressure on the general domestic price structure. Some observers note today a similarity of conditions prevalent earlier this year. Result then: A 4¢/gal. price cut.

Until now, steady calls from most benzol outlets (including synthetic rubber, pesticides, etc.) have kept producers' stocks below a market-upsetting stage. One of today's top troubles: some of the foreign-origin benzol coming in now is nitration grade—good enough to vie directly for chemical manufacturing uses.

Thus, with price the chief difference, domestic marketers may well be poised for a competitive move.

•

Quick confirmation of an earlier indication here (*CW Market Letter, Aug. 13*), is this week's 4¢/lb.-higher price on spot electrolytic copper. And with it, too, some boosts on chemical derivatives.

Copper chloride, carbonate and sulfate have all been advanced. The second round of increases (in as many weeks) has CP copper sulfate, for example, now at 20.4¢, up a cent; 99% crystal at $13.50/cwt., an increase of a dollar/cwt.

The sulfate has been extremely tight for some time, and few expect the higher prices will be much of a demand-deterrent.

•

Phthalic anhydride calls, too, continue to race at a pretty good clip. Just about all makers are pushing production at record levels, and some are actually doling out available material to customers. How long the hectic pace will keep up, though, is moot. At least one producer expects no slowdown before the end of the year.

Slated to contribute to a possible easing: This week's trickle of phthalic out of American Cyanamid's new Bridgeville, Pa., plant. Some 50 million lbs./year will be produced there when the plant's in full operation.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending August 22, 1955

UP

	Change	New Price		Change	New Price
Copper sulfate, CP, gran., bbls., works	$ .01	$ .2040	Copper sulfate, Tribasic, dealers, bgs., c.l., works, frt. equald, 100 lbs.	$2.50	$29.25
Copper sulfate, cryst., 99%, bgs. l.c.l., works, 100 lbs.	1.00	14.00	Magnesium metal 99.8% ingots, 10,000-lb. lots or more, works	.04	.325
Copper sulfate, monohydrated, 35%, dms., l.c.l., works, 100 lbs.	1.50	22.35	Red cadmium lithopone, light-red shades, bbls., frt. alld. E. of Rockies	.31	2.01

All prices per pound unless quantity is stated.

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*Bentone** 34, another Dutch Boy Gelling Agent, does equally beneficial things for lipsticks, cold creams, make-up bases and other water-in-oil emulsion products . . . improving body, providing temperature independence.

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Or perhaps you would like to know more about National Lead's newest developments in vinyl stabilizers . . . or Dutch Boy's new double-duty plasticizers that give a unique combination of low volatility and low temperature flexibility. Just fill out the coupon.

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Hoosier Solvents & Chemicals Corp.
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Nelson Road East—Anthony 0213
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2500 Vinson Street—FEderal 5428
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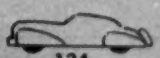
FARM INCOME and CHEMICAL CONSUMPTION

	1950-51	1954-55	Trend (since '50	Forecast
FARMERS	25,158,000	22,158,000	Down 3 million	Down 10% by 1965
NET FARM INCOME	$14.5 billion	$12.5 billion	Down 14%	Down 5% in 1955
LEVEL-OF-LIVING INDEX	122	 134	Up 10%	Rate of increase declining
FERTILIZER CONSUMPTION	18 million tons	20 million tons	Up 11%	Down 2-3% in 1955
PESTICIDE CONSUMPTION	125,000 tons	168,000 tons	Up 34%	Up 10% by 1960

Farm Plight: Chemicals—Cause or Cure?

Due to create more headlines than a Russian in an Iowa cornfield is the continuing skid of farm income. Already it's being predicted as a major political issue of 1956. And today producers of agricultural chemicals are keeping a close watch on the Administration's handling of this farm profit squeeze. Reason: the manufacturers are pushing a farm recovery program of their own — and success depends largely on the direction of government planning.

Developing into a problem of major proportions, farm prices have been tumbling since 1951. Last year's drop was about 10%; a 2% decline in the first six months of 1955 may increase to 5% by the end of the year. The total slump—from $14.5 billion in 1951 to $12 billion in '55—will amount to 17%.

The farmers' current plight is the result of two factors: declining prices of farm products (caused by the persistent peacetime "problem" of crop surplus), and to a lesser extent, rising production costs brought about by a slow inflationary spiral.

The Administration's flexible price support program, coupled with acreage restrictions, this year receives its first full test. Too early to predict its ultimate success, some recently released government figures do indicate that record-breaking crops are to be expected despite cutbacks in acreage. Improved farming methods and the use of extra fertilizer will bring higher crop yields that, to a large extent, cancel the hoped-for effects of planting restrictions.

Should the farmers cut back on the use of fertilizer?

"Definitely not," says the National Plant Food Institute, which, of course, voices the opinions of fertilizer producers. "More efficiency, not less, is the answer to the farm problem."

Fertilizer Field Day: That the farmer has been sold on the importance of fertilization is evidenced by the continued climb of agricultural chemical consumption, even though crop profits have been on the wane. Use has increased from 18 million tons in 1950 to 20.5 million tons in 1954. Although a small fertilizer-tonnage dip (2-3%) in '55 is anticipated by the experts, plant foods are expected to climb 3-5%.

But the fertilizer industry is out to expand its billion-dollar business, not just shore it against the threatening economic pressure. Increased per-acre yields through fertilizer use, spokesmen aver, will relieve the farmer's economic status; smaller acreages, hence lower production costs, will make this possible.

To illustrate, they point out that $1 spent for fertilizer will, on the average, increase profits $3-5/acre. The rule varies widely, however, and even higher returns are obtained in some instances.

A second effect of such an efficiency program will be the acceleration of an already-well-established off-the-farm movement. Since 1950, 3 million farmers have gone urban, and a further 10% reduction of farm population in the next decade is foreseen.

The continuing elimination of small farms apparently contributes to the rise of the remaining farmers' level-of-living index, which is based, for the

Farm Income vs. Agricultural Chemical Use

	1951	1952	1953	1954	1955 (est.)
Fertilizer consumption* (million tons)	18.8	20.0	20.2	20.5	20.0
Pesticide consumption (thousand tons)	182	165.5	167	168	170
Net Farm Income (billion $)	14.5	14.3	14.0	12.6	12.0

* Does not include limestone, phosphate rock, colloidal phosphate, basic slag, secondary and trace elements, gypsum, or sulfur.

most part, on the percentage of farms with automobiles, telephones, and electrification.*

The inability of many small farmers to compete effectively against highly mechanized and efficient big farms is understandable in the light of farm earnings. Of 5,379,000 farm families in the U. S. as recently as 1950, 2,849,000 realized profits under $2,000/year; 1,500,000 earned less than $1,000/year. Furthermore, the profit decline during the ensuing years dropped the 1954 median farmer income to $1,044—or 58% below the urban and nonfarm rural median income of $2,494. It is not surprising, then, that at least 15% fewer farms exist now than before World War II.

The elimination of small farms and acreage cutbacks have so far failed to solve the crop surplus problem, as this year's record yields attest. Therefore, the fertilizer industry envisions the need of even larger acreage restrictions.

Such controls on "cash crops" wouldn't seriously influence fertilizer consumption because development of secondary crops would be stimulated; these, too, would need fertilizer. Meanwhile, other fertilizer outlets (e.g., the improvement of pastures and rangelands) are also due to expand the market.

Another possible alleviation of the crop surplus problem lies in the encouragement of foreign export. One move in this direction was the amendment, this month, of the Agricultural Trade Development and Assistance Act of 1954, whereby the ceiling was raised on the sale of U. S. farm surpluses.

Palpitating Pesticides: The leveling of pesticide consumption patterns is a major problem that besets the industry.

For example, a heavy boll weevil infestation (as in 1949-50) will up insecticide consumption as much as 15%. Heavy pesticide purchases are apt to mark the year following a heavy attack, too, because of fears of a repeat weevil onslaught. By the third year, as the alarm subsides, application may drop off again. Anticipation of a return of infestation in the fourth year once more jogs the farmer to buy and use more bug killer.

This sort of up-down thinking on the part of customers keeps pesticide producers awake nights, underscores an important objective of the industry—educating the farmer to more regular pesticide habits.

The farm income pinch is apt to cut pesticide use before it affects fertilizer buying, partly because—as the boll weevil case demonstrates — the farmers' pest-control habits are prone to irregularities.

Apple growers know that low-grade fruit results from neglect of spraying—so they spray every year. Corn borer infestations are predictable through egg counts, and pesticide use follows. Similarly, any market product that visibly and definitely will be affected by an infestation will be protected from pest damage.

It is in the more general application of pesticides, not so directly affecting the final crop, that the farmer's desire to economize may have the greater impact. Reasoning that past insecticide applications have probably cut down the insect population to a tolerable number, the farmer may elect to practice spray economies for a year or two.

Weed killer is another example of an expendable convenience, from the farmer's point of view. Much as he dislikes weeds, he has lived with them before, and may decide to do so again until the economic squeeze eases.

But pesticide and fertilizer producers will try to convince the farmer that increased use of chemicals can help solve the farm income problem. Whether or not it does is moot, for application of the plan, though simple in theory, will require coordination with a tangle of other variables—e.g., population changes, political thinking, foreign export practice, fluctuating pest infestations, and even the weather.

* For instance, where previously 100 farms had telephones, an exodus from the poorer farms may leave 50 with the same number of phones. Result: ratio would change from 100:1 or 10% to 50:1 or 20%.

Half-Year Tally

From some just-released statistics on sales of soaps and synthetic detergents, one could facetiously infer that Americans are no cleaner than they were last year, and that it's costing them more to remain so.

Total sales of the cleaners during the first six months of this year were approximately the same in tonnage, but 5% higher in dollar value, than for the same period in '54. So reports the Assn. of American Soap & Glycerine Producers this week.

Figures, collected from most manufacturers in the industry, indicate that the total poundage sold, through June '55, amounted to nearly 1.76 billion lbs. compared with some 1.75 billion for last year. Dollar value: $408.7 million a year ago vs. $390.1 million last year.

The synthetic detergent category, the survey also reveals, continues to lengthen its lead over soap, albeit more slowly than in recent years. By now the former represents 62.5% of the total market. Reported sales of all synthetics for the first half of '55 totaled about 1.1 billion lbs.—an increase of 7.5%—while soap sales hit slightly more than 659 million, for a loss of 9.4%.

The year-ago figures: syndets, 1.02 billion lbs.; soaps, 619.8 million.

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Glass Reinforced Polyester Resins, Epoxy Resins	High External Surface Area Favorable Refractive Index	Thickening Thixotropy Ease of Dispersion
Inks	High External Surface Area Crystalline Structure	Anti-slip Thickening
Reproduction Paper	High External Surface Area High Chemical Purity Fine Particle Size Non-settling	Surface Extender for Greater Contrast
Floor Waxes	Fine Particle Size Favorable Refractive Index Ease of Dispersion	Anti-slip
Plastigels	High External Surface Area High Chemical Purity Favorable Refractive Index	Gelling Ease of Dispersion
Paints	High External Surface Area Favorable Refractive Index	Suspending Agent Flow Control
Latex Gloves	Fine Particle Size Ease of Dispersion	Emulsion Stabilizer Reinforcement High Tear Resistance High Abrasion Resistance
Varnishes and Lacquers	High External Surface Area Favorable Refractive Index Non-settling	Flatting Suspending Agent Ease of Dispersion
Plastisols	High External Surface Area Favorable Refractive Index Ease of Dispersion	Thixotropy Thickening
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LIONEL CRAWFORD

BATTERY SHOP: Public Service makes its own, uses Type 1400 electrolyte (cut), 17 plates/cell. Last year, 1,400 12-volt batteries (2 to a bus) were made.

Cash in Commuting Chemicals

Alarming passenger and revenue statistics might cause specialties makers to underestimate the market potential of bus owners. Over the past several years, the number of passengers carried has been steadily decreasing. Between '52 and '54, inter- and intracity lines lost a billion riders.

But the fact is that buses are still big business. By latest count there are 83,300 buses operating in the U.S. (not counting over 130,000 school buses).*

And, although the number of passengers carried went down 14% between '52 and '54, the lines' operating expenses (not counting taxes, depreciation) declined only about 0.6%. Including replacement parts and accessories (but not labor), $125 million was spent in '54 on maintenance supplies.

Top Transit: Two-thirds of the buses (55,700) are run on intracity transit lines. Biggest of the 1,575

* This and other industry-wide figures, from *Bus Transportation*.

CLEANING COMPOUNDS: 400 drums/year are bought for parts cleaning. Overhauls (done on a condition basis, not mileage) last year also required 30 lbs. of valve grinding compound, 240 pts. of aviation-type gasket cement.

DETERGENTS: Buses are washed when they need it (daily in bad weather).

companies operating in this field is the massive Public Service Coordinated Transport—serving commuters and other New Jersey residents with more than 3,000 buses driven an aggregate of 96 million miles/year.

CW asked Public Service what specialties it uses and how it buys them. Points up Maintenance Manager Frank MacManus:

It uses a lot of specialties to keep up the appearance of the buses, such as detergents, paint, masking tape, and decalcomanias (but no polish).

Mechanical maintenance and safety account for other specialties purchases: gasket cement, radiator cleaning compounds, valve grinding compounds, parts cleaning solutions, fire extinguishers (but no antifreeze: buses are parked indoors).

Unlike many smaller operators, whose purchases are too small to warrant intense quality investigation, Public Service tests many items extensively before picking a brand. Part of the reason for this is decentralization: most Public Service buses never see the main shop in Newark, are based at one or another of 37 garages throughout the state. As MacManus puts it: "If you turn loose in 37 garages something you don't know about, you can ruin a lot of buses before you find out what's happening."

Even so, the firm doesn't test everything. Says MacManus: "If we spend $200,000 on something, it's worth testing. But if we spend only $20,000, what can you save?"

Detergent Deterrents: Typical of products undergoing large-scale testing are detergents, among Public Service's biggest purchases. The company's laboratory spends up to 3 months every few years testing about 30 different brands, trying to find one that does the best job (doesn't streak when dry, spot windows, put a white film on aluminum window frames, wear out paint too fast, but does a good cleaning job) at the least cost.

During the testing, makers of items that don't pass are usually contacted for suggestions, given a second chance. Generally, after tests for extra strength of solution (in practice, overdoing the formula is a constant danger) and actual use tests, the company ends up with about three brands that qualify for bidding.

No Substitutes: What happens when somebody comes up with an improved product? It will be scheduled to be included in the next test. No special tests are made, and no product is accepted without a test—even when the manufacturer of the currently used brand claims to have an improvement.

Perhaps of even greater significance than the Public Service market itself is the prestige involved. One of the most important questions asked specialties salesmen, particularly by small lines that can't afford to test, is "Who else is using it?" If you can name a big outfit, known to be a careful buyer, it makes a real impact.

Antirat, Anticoagulant

Add another anticoagulant rodenticide to the list: American Chemical Paint Co.'s fumarin, chemically 3,(1-furyl-2-acetyl)-ethyl-4-hydroxy-coumarin. ACP will sell the potent rat killer in a 0.5% concentrate called Ratafin; formulators can produce their own over-the-counter poisons by adding carriers to bring the active ingredient down to 0.025% concentration (ACP

MORE DETERGENTS: Yearly, a big drive is made to clean up interiors.

is not planning its own retail material).

This latest rat killer, although novel on the U.S. market, has been sold overseas by ACP for several years. It's made in Germany, and domestically sold material will be imported. Pricewise, it's said to match currently available anticoagulant rodenticides (warfarin, 0.5% concentration, is selling for about $1.95 now, for example).

Current registration with the U.S. Dept. of Agriculture covers the nonsoluble fumarin, but ACP says it has produced the soluble, sodium salts of the rodenticide, may seek registration for it. (The soluble forms of other rat killers have proved to be readily marketable materials.)

Pace-Setting Poisons: The anticoagulant poisons, which kill by producing internal hemorrhage, have been leading rodenticides since Karl Paul Link produced his compound 42 (warfarin) in the late '40s. They have a number of advantages:

- They are relatively safe to use (in cases of accidental poisoning, vitamin K is an effective antidote for most, including furmarin).
- They produce no bait shyness in the rodent (it eats the poison until it dies).

In addition to warfarin (which is probably the top-volume seller now; Prentiss and Penick are suppliers of the concentrate), there are several anticoagulants sold in the U.S. besides fumarin. Tomorin is produced by Geigy, Pival is made by Motomco (*CW, Oct. 4, '52*). Warfarin, Tomorin and fumarin are dicoumarols; Pival, an indandione. All, however, work in the same basic manner.

In spite of the vast number of rodents that have been wiped out by the new compounds, rats remain a real problem in many areas. A concentrated campaign, combining the rodenticides with good sanitary measures, is necessary for complete rat control. As rodenticide makers emphasize, no compound can make up for incomplete control efforts.

•

More Capitol: Buildings formerly occupied by Reliance Varnish Co. have been purchased by Capitol Chemical Co. (Chicago) in its fourth expansion since 1933. The firm manufactures lacquers, enamels, and other industrial coatings.

Trust to Dust

Iowa corn raisers might next year be able to show Russians and other visitors results from the latest refinement of their world-famous art.

Corn's most troublesome enemy is the European corn borer. Emulsion sprays for war against borers have long accounted for a big part of corn-belt pesticide sales.

This week, corn men are being told that as good, and perhaps better, control of the borer as that provided by the emulsions is possible by use of the new granular-type insecticides. And —important to farmers who use the stover as feed for livestock—the granular materials leave 100 to 200 times less insecticide residue on the leaves.

That is the finding revealed Wednesday (Aug. 24) by the U.S. Dept. of Agriculture—result of two years of tests at Ankeny, Iowa, by USDA and the Iowa Agricultural Experiment Station. The insecticides DDT, EPN, heptachlor and malathion were tested on two different carriers: tobacco dust and attapulgite clay (although in one series of tests the clay proved the better carrier, in another they checked out about the same).

Few significant differences—either good or bad—were seen among the various active materials, or between them and control batches of emulsion types. Exceptions: in one experiment on late-brood borers last year, malathion proved ineffectual; in another trial, a combination of DDT and heptachlor on attapulgite gave considerably better-than-emulsion control of second-brood borers.

Stalking the Borers: The granular toxicants leave less of a residue problem because they don't cling to leaf surfaces, but rather slide down into the leaf whorls and to the junctures of leaf and stalk. It is here that the young borers do most of their feeding. (Emulsions are still better for controlling leaf-eaters.)

While the amount of residue of the granular form left on leaves is 100 to 200 times less than that from emulsion sprays, the amount left where leaves join stalks is only about half. Total amount left on the plant, however, is much less.

This means less of a problem with such neutrotoxins as DDT, which often accumulate in the body fat of livestock and in the milk of dairy

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SPECIALTIES . . . .

cows fed on plants previously treated.

Granulars would thus appear to be the answer to the residue problem faced by farmers who graze livestock in cornfields after harvest—or who ensile it for later feed use.

•

Itch Inhibitor: A new flesh-toned lotion, trademarked Tronolen by Abbott Laboratories, is designed to relieve itching and surface pain. Tronolen's three actions (anesthetic, antihistaminic and antipruritic) provide relief for cases of minor burns or sunburn, poison ivy, oak or sumac, insect bites, abrasions, chafing, diaper rash, scalds. Available in 75-cc. plastic squeeze bottles, Tronolen consists of Abbott's Pramoxine Hydrochloride and Chlorcyclizine Hydrochloride.

•

Curing Epon: For curing Epon resins, Shell Chemical Corp. (New York) has a new agent: Epon Curing Agent BF3-400. Solid at room temperature, it is easily stirred into warmed Epon 828, the company says, to yield catalyzed mixtures usable for several months (stored at room temperature). Also claimed: the mixtures have long pot lives, yield products with chemical and heat resistance better than that of similar products cured with aliphatic polyamine agents.

•

Pesticide Panel: Highlighting the 22nd annual meeting of National Agricultural Chemicals Assn. (Spring Lake, N.J., Sept. 7, 8, 9) will be a panel discussion of the latest developments relating to the Miller amendment to the Federal Food, Drug and Cosmetic Act. (The Miller amendment regulates the use of pesticides on food crops.)

•

For the Heart: Blood supply to the heart muscle is improved, to prevent attacks of angina pectoris, by a new tablet-form, long-acting nitrate. The E. R. Squibb & Sons' (Division of Olin Mathieson Chemical Corp., New York) drug is not designed as a substitute for the quick-acting drugs (nitroglycerine, amyl nitrite) but is longer-acting. The company says it is often effective in preventing anginal attacks, may eliminate the requirement for nitroglycerine, rarely has the unwanted side effects of nitrate therapy.

•

Yeast for Better Rising: A treatment for hangovers—Amber Laboratories'

(Milwaukee, Wis.) new Quaff-Aid—is compounded principally of brewer's yeast. Emphasizing that the product is a food, not a drug, the firm says it is nontoxic, nonharmful, and nonhabit-forming. Hangover relief is supplied by creating conditions for maximum oxidation of alcohol during normal metabolic processes.

•

Dry-Cleaned Hands: Chemicals and Materials Corp. (Terre Haute, Ind.) has—for gardeners, home decorators, tire changers—a waterless hand cleaner: Veco. It doesn't contain caustic, alkali, ammonia or free acid; does contain silicone, hexachlorophene, lanolin. A 4½-oz. tube costs 69¢.

•

Adhesive Additives: Now commercially available, Corn Products Refining Co.'s (New York) Argo Polyose is said to have water-soluble adhesive properties similar to high-soluble dextrins and gum arabic. Claimed for the Polyoses (four fluidity grades are available): clarity, stability, compatibility with other water-soluble products.

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Liquid Lid: Pots of hot solder, kept molten for continuous soldering operations, can be kept from scumming (surface oxidation) with a new synthetic wax, Glycowax S 932. The Glyco Products Co., Inc., preparation is floated on the hot solder, where it melts and forms a continuous liquid layer. S 932 has a melting point of 135-142 F, flash point of 622 F.

•

Cool Seat: A new kind of Koroseal (B. F. Goodrich, Akron, O.) upholstery material is designed to feel cool in the summer. Basically composed of microscopic, interconnecting cells, the porous, air-filled material permits evaporation of perspiration. At the same time, Goodrich says, the new Air Porous Koroseal is water-repellent, easy to clean.

•

All that Glitters: Du Pont's Mylar polyester film is being made into a decorative yarn that sparkles. Aside from glitter, the yarn, says the company, has sufficient strength to be twisted, quilled, woven or knitted into fabrics at normal machine operating speeds. In no sense a fiber—the yarn is sliced from Mylar sheets on conventional machines—it may be dyed with the same colors used on Dacron. The Mylar requires little special handling: it can be satisfactorily dry cleaned, washed, ironed at normal temperatures.

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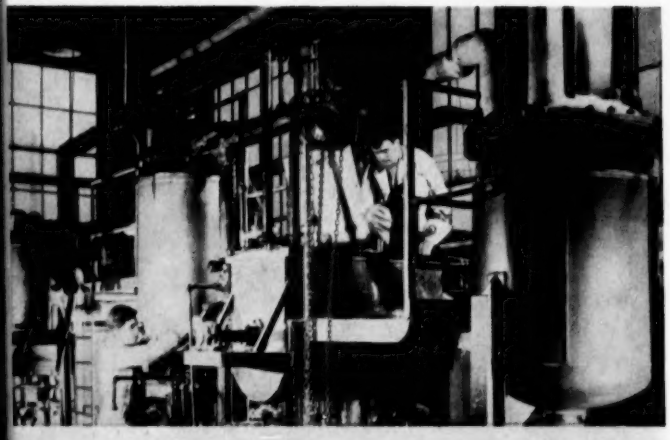
GC Allied Chemical

Modern Witco Laboratory



A complete pilot plant permits study of chemical operations on a scale simulating actual plant processes, thus permitting evaluation of equipment as well as method.

Using the most modern equipment devised, experienced chemists develop new Witco products . . . provide complete technical service information.

for complete technical service
more efficient chemical applications
improved customer products

Illustrated above is Witco's Technical Service Laboratory, staffed by skilled chemists and engineers who work with the most modern experimental and testing equipment. Linked with the activities conducted at Witco's other two research centers, these extensive technical service facilities are devoted to the improvement of existing products . . . the development of better new chemicals . . . more efficient and economical usages . . . the solution of customers' manufacturing problems.

In every field where Witco organic chemicals are used—rubber, plastics, paint, general chemical processing—our Technical Service Department will gladly lend expert assistance in surmounting your production difficulties.

WITCO CHEMICAL COMPANY

122 East 42nd Street, New York 17, N. Y.

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